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AT HOME AND ABROAD

At home there is prosperity and peace. Abroad there is pugnacity and pauperism. At the beginning of the New Year it is well to inventory some of the conditions that have affected us and may influence the future. Abroad we are probably a very much disliked nation. One group condemns us loudly because we have furnished supplies which have been used to their detriment. The other group dislikes us because we have grown rich and waxed fat by charging high prices for material much needed by them. We have prospered because of the misfortunes of others. We soothe ourselves with relief funds and point with pride to the few millions we have sent to relieve the necessities of the unfortunates. Has our charity been proportionate to our prosperity? Has the bulk of our contributions come from those who have profited most by the foreign misfortune? Has this prosperous nation contributed as much for relief as some of the nations which have grown lean and wasted in the conflict?

Statistics, which are said to be approximately accurate, indicate that we have contributed $12,000,000 out of a total of $250,000,000 to the relief of Belgium. Furthermore the balance, $238,000,000, has been spent largely in this country for the supplies,

from which we have received a profit of about 20 per cent. We have received in profits a sum nearly four times as great as we have contributed. Have those who received the profits contributed as much proportionately as those who have not? It is stated we have given 10 cents per capita for the relief of Belgium. New Zealand gave $1.25 per capita and Australia still more.

Up to a couple of months ago our aggregate contributions for war relief were reported to amount to $34,000,000 in which is included $6,000,000 for the funds of the central empires, $6,000,000 for Jewish funds, $3,500,000 for the work of the American Red Cross and $6,500,000 for various funds, in addition to the $12,000,000 for Belgium. This seems like a large sum and we may be inclined to believe that we are dispensing relief with a liberal hand; but this sum sinks into insignificance when we consider what our other hand is doing. Since the beginning of the war, our foreign trade has totalled $12,000,000,000. Estimating profits at an average of 20 per cent, we have profited $2,400,000,000. Our receptive hand has received seventy times more than our liberal hand has given. "Let not your left hand know what your right hand doeth" seems misapplied in this instance. It would seem desirable that, through a formal or informal introduction, they should become acquainted with each other. Compared with some of the nations, staggering under the burdens of war and simultaneously contributing to relief, our contributions are moderate indeed and exhibit little of the sacrificial spirit which should enhance their value.

We may not escape the animosity of all the warring nations, but we may mitigate it, by showing a greater charitable American spirit in alleviating the misery of their unfortunates. A little introspection now and then is good for the soul. If we could occasionally see ourselves as others see us, it would materially assist in our education. While we have a duty toward others, we also have duties of our own. We must remember that P stands not merely for prosperity; it stands also for patriotism, preparedness and peace. Patriotism insures preparedness, and preparedness insures peace.

There is a professional as well as an humane aspect to the question. The International Veterinary Congress, held at London, promised to be one of the most successful meetings yet held. Much money and effort had been expended to guarantee its success. The thunder-clap of war aborted its proceedings and the effort to cos-

mopolitanize and promote the solidarity of the profession was fruitless. The trail of the war, even if it should soon terminate, will cast a blight on the next Congress. Professional comity has been endangered and so much bitterness has been engendered, that more than a few years will be required for the cicatrization of the war-inflicted wound. Whatever may be accomplished in the next two years, there is, in the meantime, a more immediate condition to consider. Many of our professional brothers in Europe have been completely ruined by the war. The outlook for the future is hopeless without aid, and who is better able to administer it than their brothers in America?

At the beginning of the New Year, especially, it is well to use a little introspection; to consider the needs of others as well as our own; to rise to the occasion when worthy opportunities to assist occur, and cement the bonds of professional brotherhood throughout the world. P. A. F.

THE ANIMAL FACTOR IN AGRICULTURE

The relative importance of animals and their products to the public is well illustrated in the report of the Secretary of Agriculture, just issued. It is stated that meats and dairy products constitute 37 per cent of the average diet, fish 2 per cent, cereals 31 per cent, Irish and sweet potatoes 13 per cent and other vegetables 8 per cent. More than one-third of the products of agriculture concern those things with which the veterinarian has to do.

The question as to whether the domestic food supply of this country is keeping pace with its growth in population is answered affirmatively. Statistics for the past 16 years show that the population of the Nation has increased, in round numbers, 26,000,000, or 33 per cent. Notwithstanding the rapid increase in population, the production per capita of the commodities indicated above, with the exception of meats and dairy products, has remained approximately the same or has increased. With the agencies now available for improving agriculture there is ground for optimism as to the ability of the Nation, not only to supply itself with food, but increasingly to meet the needs of the world.

There is need for an increase in the meat production and this involves two factors; checking and eliminating diseases and para-

sites—the work of the veterinarian, and increasing and improving stock raising by extending the industry where conditions are favorable and by pointing the way to better breeding and feeding.

The eradication of the southern cattle tick is proceeding more rapidly than ever before and is opening up for beef and dairy production, a large territory. Within the past three years the quarantine has been removed from 106,810 square miles, making a total of 294,014 since the work was begun in 1906. More than 40 per cent of the original tick infested territory has been cleared, and therefore the direct losses, originally estimated at $40,000,000 annually, are being greatly reduced.

Sheep and cattle scabies are being eliminated rapidly from the western states.

Hog cholera, the cause of heavy losses, has been less prevalent during the year than for many years. This is due to the wise application of the protective serum. In 14 selected counties where demonstration work has been going on, there was an increase of 474,734 in the number of hogs raised and a decrease of 121,628 in the number lost, or a total gain of 596,362 hogs.

Contagious abortion has reached such proportions as to seriously threaten the cattle raising industry. It strikes at the source by curtailing the production of calves. The department has been giving its attention to this disease and vigorous efforts are being made to advise stock breeders as to its nature and means of prevention and eradication.

Tuberculosis is regarded as the most common, destructive, and widely disseminated of the infectious diseases of domesticated animals, especially of cattle and swine. Its transmission to man may be prevented in a reasonable measure by the pasteurization of milk and the inspection of meat. The loss from tuberculosis is estimated at $25,000,000 annually. Three undertakings to eradicate this disease seem practicable to the department at this time: 1st Eradication from pure-bred herds of cattle. Compulsion is not necessary. Assistance may be rendered by advice and supervision as to proper disposal and management. Tuberculin reactors may be retained under proper quarantine conditions and their offspring raised free from tuberculosis. 2nd Eradication from hogs. It is believed this would be relatively easy of accomplishment. Hogs do not convey the disease to one another to any extent. They contract it from cattle, chiefly in two ways—by being fed on non-pas-

teurized products from creameries and by following cattle of somewhat mature age in the feed lot and feeding upon the undigested grain. An educational campaign should be effective in removing these two sources of infection. State laws requiring the pasteurization of skimmed milk and other products before they leave the creameries would be desirable. 3d. Eradication from restricted areas. The plan would be to select certain communities in which, after a thorough educational campaign has been made, the stock owners are willing to cooperate in eradicating the disease entirely from that territory. This would require the slaughter of infected animals and would necessitate reasonable indemnity for the animals slaughtered. This would undoubtedly require large expenditures. The joining of areas freed of tuberculosis in the manner proposed should gradually result in the elimination of the disease from groups of counties and from entire states.

Such an undertaking would be very similar to the plan of exterminating cattle ticks in the South. It is believed that such a plan should succeed against tuberculosis. It is a large task. Its feasibility will have to be thoroughly established first. The department has recommended in the estimates for the next fiscal year that an appropriation of $75,000 be made for the inauguration of the work.

The annual losses of live stock in the United States from the depredations of predatory animals has been estimated at $12,000,000. A single wolf has been known to kill more than $3,000 worth of stock in one year. A campaign has been inaugurated to eliminate the wild animals and thus diminish the losses.

Attention is called to the sheep industry, which has declined in some sections of the United States. Recommendations are made urging its extension for the dual purpose of increasing the wool supply—much of which is imported, and the food supply, in which some advance has been made.

Recommendation has also been made that the department be given authority to inspect establishments producing foods or drugs intended for shipment in interstate or foreign commerce. No specific authority exists at the present time. There are many forms of adulteration which are exceedingly difficult to detect without inspection of the place of manufacture. The importance of sanitation in the preparation of drugs and food products is obvious.

The production of potash from kelp is a possibility which may develop into a matter of economic importance in this country. We have been entirely dependent upon the German mines. The prohibition, by Germany, of the exportation of potash salts has resulted in abnormally high prices for this material. With the utilization of by-products formed in the production of potash from kelp, it is hoped that the potash industry may prove profitable and permanent and render this country independent of foreign sources in normal times.

The report shows that the department is animated by a sincere desire to conserve and augment the products of the soil and the supplies of this nation. On the animal side it is shown that progress has been made in the eradication of disease, and that some increase has been attained in the animal population. With educational and cooperative methods still further progress is to be expected. P. A.F.

EUROPEAN CHRONICLES

Bois Jerome, November 1916

ETIOLOGY OF INFECTIOUS ANEMIA:—More than a year ago, I analyzed in the A.V.R. from Leclainche's Journal, a communication taken from a German paper which related to the etiology of this disease and was from two German writers M. M. X. R. and R. Seyderhelm. The paper presented a new aspect of the question and undoubtedly attracted the attention of many investigators.

Director Vallee and Professor Carre, who are so intimately connected with the pathology and the history of infectious anemia, have made in the *Annales de l'Institut Pasteur* the answer which the new etiological discovery deserved and was expected from them.

Let us summarize the article of the savants of Alfort, which *de novo,* establishes their former conclusions, demonstrates the errors of the German discoverers, and besides adds new suggestions to the conclusions of all their investigations.

First of all, they refer to the principal results obtained by them when, some 12 years ago, they undertook the work of the history of infectious anemia, results which they presented under five conclusions: 1st, the pernicious anemia of horses is an infectious disease, transmissible by inoculation and due to an ultra-microscopic filterable virus; 2nd, the blood and urine of the sick are

virulent; 3rd, the virus is destroyed by heat at 60°; 4th, infection takes place notably through the digestive tract, by the means of the urine; 5th, apparently recovered horses, remain, in reality, infected and carry the contagion about them.

These essential ideas were evidently the object of many investigations. At various epochs, confirmation came from various parts of the world, presented by authorities known to all and which Vallee and Carre take pleasure in acknowledging, namely; Ostertag of Germany, Marek in Hungary, Francis and Marsteller of Texas, Mack of Nevada, Mohler of Washington, Van Es of North Dakota, Told and Wolbach, etc. To which is added the Japanese commission, whose labors, it has been my great pleasure to consider in the A.V.R. also.

Following the strong confirmation of their work, the French authors speak of the conclusions presented by M. M. Seyderhelm. It must be remembered that with these gentlemen, pernicious anemia is not due to an ultra-microscopic virus, but to a poison, which they name *Oestrine,* which is contained in the oestri of horses, the *Gastrophilus equi* and principally the *G. hemorrhoidalis.*

The experiments of Carre and Vallee, on this aspect have always proved negative, and in Japan the Commission has also published the failure of the experiments made to elucidate the question.

It is true that verminous anemias are observed in horses, some of gastrophilus origin, others of strongyloids, but the unity of pernicious anemia and its verminous etiology only cannot be admitted. Among the facts, which substantiate the opinion of Vallee and Carree and so many others, is the one advanced by the German authors, viz: that the poison from the œstri resists heat in the autoclave for one hour and a half and three hours, is not altered by alcohol, acetone, ether, chloroform and trichloride of iodin, and yet notwithstanding all these, remains with its toxic and anemic power.

Without discussing these statements or even admitting them as correct, the French authors remark that they have proved as well as others that the virus of infectious anemia loses all its infective or pathogenic quality with simple heating at 60°C. and that the virus is equally sensitive to all the antiseptics.

After this evident proof of the duality of the disease and a few critical remarks on the pathogenic properties recognized in œstrine, on the theory of its action when in the organism and also on the transmissibility of the disease by insects, it is stated that whatever

experiments they have made in that direction and failed in transmitting the infection with insects, parasites and even with the products from the crushing of Gastrophili taken from animals that died from infectious anemia; on this account the necessity for new experiments arises before arriving at a definite conclusion on this point of the etiology of the disease.

In closing their article, Vallee and Carree summarize the best established facts relating to the etiology and the diagnosis of the infection, so particularly insidious, as follows: 1st. The disease is transmissible through the digestive tract. Blood and urine of the sick are virulent. Whenever the watering of animals is allowed with water soiled with animal excreta, this is a permanent source of contagion, the virus of anemia resisting for months dessication and putrefaction.

2nd. During the chronic evolution, anemia presents crises which are characterized by violent accesses of fever, of icterus, of hemoglobinuria; the blood is little coagulable; the erythrocytes agglutinate and the serum is highly colored and dichroic. Between the crises, the disease can be detected by the examination of the always albuminous urine, by the cardiac test, and accessorily by the examination of the ocular mucous membrane which appears fatty, pale and infiltrated. At the post mortem can be found splenomegaly, large cardiac liver, endocarditis and a strong hematopoietic reaction of the marrow of the long bones.

3rd. Subjects, apparently cured, remain infected for months and years. Whatever success may be obtained by various forms of treatment, real recovery, characterized only by the non-virulence of the blood, is problematic.

4th. Separation, watching of the sick, disinfection of the excreta, protection of the drinking places are imperatively indicated. Killing of the diseased and destruction of the cadavers are essential prophylactic measures.

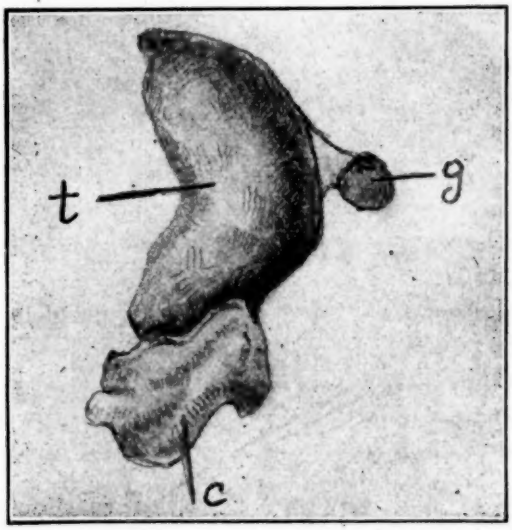
5th. To this day all attempts at vaccination or serotherapy have been negative.

THYROID TUMORS:—Veterinary literature can be said to be rather limited on the subject of these tumors and yet they are identical with those found in man, being at times benignant and at others malignant. Professor Petit has mentioned some in animals, which have not been noticed in man.

This is the introduction that the learned Professor gives in an article relating to the case of a Thyroidian "Aberrant" Cancer in the horse, which will be but the beginning of a series, where tumors of the thyroid body will be considered.

To make his subject clearer, Petit first proposes a classification of these tumors, somewhat different from that generally admitted.

He divides them into two classes, (a) the Epithelial and (b) the Conjunctive and Mixed Tumors.



Typical Thyroid Epithelioma (Horse)
(Normal size)
t—Intact thyroid gland.
c—Accessory cancerous thyroid.
g—Small lymph gland hypertrophied.
(Cancerous adenopathy first step of the generalization.)
Copied from the *Recueil.*

(a). The epithelial are Benignant or Malignant. The first or goiters (adenomas, which can be transformed exceptionally into cancers), the malignant or cancers (thyroidian epitheliomas.)

There are two kinds of goiters: 1st. those that take their origin in the thyroid body, the Goiters Proper. 2nd. those that

begin in the accessory thyroids (which must not be confounded with the paratyphoid glands) Aberrant or Accessory Goiters.

The malignant or cancers are of four kinds: 1. those which originate in the thyroid body, with two varieties, the Typical and Atypical Cancers: 2. those which start in the accessory thyroids, the Aberrant Thyroid Cancers: 3. those derived from the parathyroid glands, Parathyroid Cancers: 4. those resulting from an inclusion or propagation, Malpighian Cancers, Branchiogen Cancers.

(b) The conjunctive and mixed tumors are divided into: Benignant, imperfectly studied, exceptionally Malignant, sarcomas of the various kinds: Mixed, embryomas, osteo-epitheliomas.

After the presentation of this new classification follows the description of the case of this aberrant thyroid cancer, which was developed at the expense of an accessory thyroid and discovered in a horse.

It is the first observation of its kind in comparative pathology and, though only a post mortem discovery, it is very interesting.

The illustration will give a good idea of the definition given by the author.

When the aberrant thyroid cancer develops at the expense of a supplementary or accessory thyroid, it is said to be Aberrant. It leaves the thyroid body intact and on that account it is easy to see and recognize at post mortem. It may be taken for an adenoma or aberrant goiter, except when it is generalized or accompanied as in this case with positive circumthyroid adenopathy.

There was nothing clinically to reveal the presence of the tumor except at the first stage of its evolution; though it showed progress toward generalization, as indicated on the plate by the little lymph gland already invaded by the cancer. The aberrant or accesssory thyroid which has become cancerous is at the inferior extremity of the normal gland.

Aberrant thyroid cancer may be typical or atypical. It is typical when its structure resembles the structure of the gland from which it rises. It is atypical when it does not.

The subject of this article was a typical cancer.

Professor Petit will, in other articles, continue the series of his studies on this neglected subject of comparative pathology.

LUMBAR MYELITIS AND TREATMENT: This is commonly called, among French practitioners, dog's illness (Mal de Chien.) on ac-

count of its prevailing manifestations, which make the animal affected assume frequently the sitting position as the result of the threatening paralysis, or its inability to rise, when laying down, as often observed in azoturia.

Frequently there are complications of distemper; it often occasions serious losses among horse breeders, especially when it breaks out among thoroughbreds.

Perfect recoveries are seldom obtained or at least the literature is meager of such records. This is probably due to the very uncertain and frequent failures of the various treatments which have been advocated against paraplegias.

In the Panisset Review, there is an article on a preparation which seems to have given encouraging results to its discoverer, Mr. Veloppe.

This preparation is made of cacodylate of strychnina 0.1 gram, glycerophosphate of soda 10 grams, distilled water 10 grams. This is not a solution, but a mixture, which to be satisfactorily used, requires that the cacodylate be in the finest powder, as otherwise the canula of the syringe might become obstructed if the powder was too coarse or might pass through and give rise to trouble in the veins, acting as a foreign body which could not be absorbed.

The injections are made intramuscularly. An abscess may follow but is of no serious consequence.

On account of the peculiarities which often accompany the administration of strychnia, the writer recommends to begin with a dose of one centigram, say an injection of 2 c.c. of the mixture, whatever be the size and weight of the animal. According to cases, this daily dose will be increased one or two cubic centimeters (½ or 1 centig of the strychnin).

In this way the tenth day may be reached with a dose of 10 centigrams and even more, but it will be better to divide in two doses.

The treatment should then be stopped and started again after a rest of 10 days.

Following the description, the records of five cases are given, which present a perfect recovery in three of them, and an improvement in the others to such extent that the animals showed only a slight twitching of the loins when in action.

Perhaps this treatment deserves a trial on a larger scale?

SERUM OSMOSIS:—The treatment of wounds has been the object of much interest in recent times, and while some treatments have given most satisfactory results, others, if not failures, have not at least realized any action superior to that of ordinary therapeutic agents.

The polyvalent serum of Leclainche and Vallee seems to have been the most satisfactory in its many applications, in human as well as in veterinary surgery. For the latter, publications of the results obtained are of repeated occurrence and their records are continuously found in our professional journals.

Nevertheless, the question has presented itself to some, viz: if the normal serum from the blood could not give to wounds a greater vitality than the one from an artificial serum, without, however, giving the exact results indicated by the polyvalent. It would seem as if the natural blood serum, without having the properties of the polyvalent, might by the vitality it would communicate to the tissues, give a rapid cicatrization and could be utilized in the treatment of severe or complicated wounds."

In these words, Dr. P. Chatelain presented the subject in his article in the *Recueil de Medicine Veterinaire,* relating to the Treatment of Wounds by Blood Serum Obtained by Osmosis.

The principle in obtaining this serum is one of physics, viz: Osmosis, which will permit the serum to be obtained without difficulty.

Indeed, taking into consideration, the power of exchange which can take place between osmotic substances, "the surface of a wound is covered with a saturated solution of chloride of sodium, a phenomenon of osmosis will take place from the blood serum towards the saline solution, which would result in vivifying the tissues of the wound by the serum, which would bathe it and by the great vitality it will bring in the tissues moistened with the saline solution."

The name of serum osmosis has been selected for this mode of treatment because if the solution indicated is one of chloride of sodium, the results would be the same with any other saline solution. That of ordinary salt has been selected because it is the type for osmotic solutions. It is not irritating, is easily used, insignificant in cost and its osmotic equilibrium for blood serum is not very high.

The chloride of sodium can be used as a powder or in solution. The former is indicated for fistulous wounds, when the application of a dressing soaked in the solution is difficult, or when the entrance of the fistula is small or opening upward.

The solution is obtained by mixing a good quantity of salt in a bottle with sterilized water and shaking it well. A solution is thus obtained which will answer all purposes.

For the solution to act well, the wound must be well soaked with it. Dressings soaked in it can be laid and slightly pressed upon the wound. Flat surfaces can be covered with it. Fistulous wounds are injected with it and their openings closed with moist dressings.

The results obtained by this treatment are said to be unexpected. There is rapidity in the formation of the cicatrix, with an improved appearance of the wound and a reduction in the suppuration, which is sometimes entirely arrested after the first dressing.

With such advantages it is evident that a resort to serum-osmosis can be essentially beneficial and that it deserves thorough application.

SUMMARY FROM RECENT PUBLICATIONS RECEIVED AND BIBLIOGRAPHIC ITEMS.

Titles marked "X" will be summarized. Those marked "O" will appear as abstracts.

VETERINARY RECORD—Sept. 7th. A treatment for horse sickness by W. F. Poulton, M.R.C.V.S.—(O) Undiagnosed abscess by P. G. Bond, M.R.C.V.S.

Sept. 23d.—The coloring of foods by W. J. Young, F.R.C.V.S. (O) Punctured wound of the lungs by Rob. Henderson, M.R.C.V.S.

Sept. 30th.—(O) Chloride of adrenalin after parturition by H. Thompson, M.R.C.V.S.

October 7th.—Infectious paraplegia by M.R.C.V.S.—Undiagnosed by W. W.

VETERINARY NEWS—Sept. 9th.—Mechanism of saline dressings by Kenneth Daylor, M.D.—On the use of petroleum for cleansing wounds by H. Embree, M.R.C.V.S.

Sept. 23d.—Nervous diseases in the horse by E. W. Hoare, F.R.C.V.S.

October 7th.—(O) Empyema of the nasal sinuses by E. Langford, M.R.C.V.S.—Women as veterinary surgeons by Ada Helen.

VETERINARY JOURNAL.—Sept.—Local anesthesia by Prof. Woodridge.—(O) Paracentesis abdominis by P. G. Bond.—(O) Coital or vesical exanthema by Hancock.—Case of primary infectious osteomyelitis.—Peculiar case of skin disease in W. Rhodesia by J. M. Armfield.

IL NUOVO ERCOLANI.—Aug. and Sept.—Leishmaniosis in dogs and prophylaxy of infantile Kalar-Azar by Doct. Guido Finzi.—Asphyxiating gases by Doct. E. Bellotti.—(O) Umbilical abscess discharging through the vulva by Doct. C. Fabretti.

CLINICA VETERINARIA.—Aug.—Experimental researches on the antibodies of spores by Doct. Giovanni Chimaran.—Contributions for the differential diagnosis between exudates and transudates by Doct. Ugo Mello.

Sept.—Anatomo-histologic and embryologic communication on a case of hermaphrodism by Doct. Pietro Venturi.—Digipurin in veterinary medicine by Doct. A. Medri.

IL NUOVO ERCOLANI.—Spleen abnormal and accessory by Prof. Ghisleni. Upon the technic of ovariectomy in the slut by Doct. Gosbodinoff.—(O) Congenital atrichia in a calf by C. Ferrero.

BULLETIN DE LA SOCIETE CENTRALE—(X) Benignant tumor of the mammae in dogs and cats by G. Petit and Germain.—(X) Phenicated and guaiacoled intravenous injections in distemper, anasarca and pneumonia by Poret.—(X) Oxalemia in domestic animals by Doct. Rodgers.

RECUEIL DE MEDECINE VETERINAIRE.—(O) Caseous pneumonia in a pig by Dr. Chausse.—(O) Strangulated inguinal hernia in a mare by Pezet.—Trypanosomiasis of camels in Maroc by Bouin.—(X) Anomalies of the heart in a dog by G. Moussu.

ANNALES DE L'INSTITUT PASTEUR.—Sept.—Intracellular digestion in protozoans by Dr. S. Metalmikov.—Experimental antiexanthematous serum and its application in man by C. Nicolle and L. Blaizot.

ANNOUNCEMENTS of the New York State Veterinary College for the session of 1916-1917 and also that of the Chicago Veterinary College have been received. The latter has added to the program usually presented by veterinary faculties of colleges, generally, a great collection of recorded cases which are of great interest, the records being taken principally, however, from cases that have occurred at the clinics of the school.

A. LIAUTARD.

—THE INSPECTOR, official organ of the National Association of Bureau of Animal Industry Employees, Number 1 of Volume I of this interesting publication, edited by H. B. Raffensperger, has reached our desk. "The object and purpose of the magazine will be to promote the interests of the association by giving some degree of publicity to the work that is being done by the employees of this Bureau; also to disseminate information on matters to the different employees of the different stations and thereby bring them into closer working relationship." The first number gives every promise of attaining its object.

AN ARMY VETERINARY CORPS*

C. J. MARSHALL, Philadelphia, Pa.

The writer recently made a trip to the war zone of the English and French Armies for the purpose of making observations on the usefulness and care of horses in war. This trip was made possible through the generosity of a friend of the University of Pennsylvania. At the same time he was appointed a delegate by the Presidents of the American Veterinary Medical Association and the American Humane Society to make observations for them along the same lines. All furnished valuable assistance in arranging for the passport and letter commendatory from the Secretary of State, the Honorable Robert Lansing, and our diplomatic representatives abroad for the necessary authority to get into the lines of the two armies. Permission was promptly obtained from the war office in England to visit their remount stations and veterinary hospitals in England and France. Similar permission was obtained from the French War Department to visit some of their remount stations, veterinary hospitals and cavalry schools. At the same time an opportunity was given for investigating the work of the Royal Society for the Prevention of Cruelty to Animals and the Blue Cross which is a branch of the Dumb Friends League in London. Every courtesy was afforded by these armies and societies to make the trip useful and profitable. The writer feels under a great debt of gratitude to each of them for the kindness and assistance so generously and promptly given. The experience was wonderful and the surprises many. It is hoped that due allowance will be made for any extravagant opinions that may be expressed in reviewing the observations made.

Our association is especially interested in the care and treatment of horses used for military purposes and the organization of the Army Veterinary Service at the present time, on account of the recognition that has recently and justly been given to veterinarians in our army. We have felt for many years that better results could be obtained if our profession were properly recognized and the necessary authority given to our Army Veterinary Service. We should be truly grateful for the recognition recently received,

*Presented at the meeting of the A.V.M.A., Aug. 23, 1916. Detroit, Mich.

but never satisfied until our Army Veterinary Service is properly organized and equipped to the fullest extent.

In reference to the necessity for horses in war, there can be no question. It is true that much of the work formerly done by them is now handled by machine drawn vehicles. Each has its place. Handling the supplies for an army is an immense undertaking and without horses an army would be helplessly handicapped. The kinds or classes of horses needed in war are: riders, light and heavy draft, and pack. The riding horses are used by the light horse troops, mounted infantry, pack, and cavalry. Those used by the first three average in height from 14.2 to 15.1½ hands, and the cavalry horses are 15.1½ hands and over.

Light draft horses fit for field artillery and transport wagons, are 15 hands and over. The heavy draft horses are the same height but do their work at a walk. The Shires, Clydesdales, Belgians and Percherons make the ideal heavy drafters the same as in civil life. Much of the heavy hauling is done in fields, woods, mountains, etc., where it is impossible to operate machine drawn vehicles. The American mule has proved itself most useful in the various kinds of work.

The remount service of an army looks after such duties as purchasing remounts, issuing them to the various units of the army, disposing of those that are unfit for service in the army, maintenance of an equal standard in units, studies the horse supplies of the world for peace and war requirements and the mobilization in horses. This service is well organized and its duties carefully outlined. In the English army, the remount service is controlled by the Quarter Master General through the Remount Directorate which is a branch of his department.

The Army Veterinary Corps is under the control of a Director General at the war office. He is a veterinarian and has the rank of Major-General. The general function of the corps is to secure the efficiency of the animals of the forces in the field by preventing the introduction and spread of transmissible diseases, reducing wastage among animals by means of prompt application of first aid, relieving the field army of the care of sick and inefficient animals, the presence of which hampers mobility, treatment in hospitals of animals removed from the field army and by replenishing veterinary equipment. The chain of organization for this purpose is as follows: veterinary officers with field units, mobile veteri-

nary sections, veterinary hospitals, veterinary convalescent depots and depots of veterinary stores. The whole being controlled by the Director of Veterinary Service who is assisted by Deputy Directors, and assistant Directors. Sick, wounded or otherwise unfit animals are turned over to the veterinary corps which has entire charge of their care and treatment. When cured, they are turned over to the nearest remount section. If the case is found to be incurable, it is destroyed or sold as considered best by the proper veterinary officer. The results from handling disabled animals in this way have been surprisingly good. Of the first 100,000 that passed through the English veterinary hospitals, 70% were returned to the army, in most cases, better horses than when first purchased. Better results are now possible for the reason that the hospitals are established, better equipped, and the men are better trained to carry out instructions.

By a corps is meant a department of an army having its own organization and head. This is true of the army veterinary corps. Men enlist for the veterinary corps the same as in other branches of the army. There are something over 18,000 men serving in the English army veterinary corps. They are under military discipline, wear an army uniform, and conduct themselves as good soldiers should. An effort is made to get men who are not qualified physically for fighting. Where so many men are required, it is not possible to get all that have had experience in handling or caring for horses. Some are from factories, mines, etc., and army life is the first opportunity they have ever had to care for or handle horses. A large proportion of the men connected with the veterinary corps were thoroughly trained horsemen before the war began and every effort has been made since to teach them the details of good horsemanship.

In the hospital service a grand total of 382 men of all ranks are allowed to look after each 1,000 horses. The commanding officer is a Major. With him is associated two Captains, two Lieutenants, a Quarter Master and one Warrant Officer. All the officers except the Quarter Master, are veterinarians. In addition to the above officers, there are four Staff-Sergeants whose duties are general, and ten Sergeants. One Sergeant is assigned to office duty, one to the pharmacy, one to the operations, four on general duty, one detraining and entraining, one on forage, and one in the quarter-master stores.

There are 24 Corporals including six Lance-Corporals. They are assigned as follows: one to forage, one to operations, one to officers' mess, one detraining and entraining, and twenty to general duties.

There are 54 Privates (Dressers) which include 15 Lance Corporals. One of these is assigned to office work, one to the pharmacy, eight to operations, and forty-four to the various wards.

There are 261 Privates (Grooms). These are assigned as follows: 200 for grooming (one for each five horses), twenty detraining and entraining, and conducting parties, twelve drawing, preparing and issuing forage, ten cooks (one for officers' mess, one for sergeants' mess, and eight for men's mess), nine batmen or servants, three on police duty, two storemen, one orderly and four in the sanitary squad.

One Farrier Staff-Sergeant has general supervision of shoeing. He has two farrier Sergeants, four shoeing smith corporals and eleven shoeing smiths. There is one shoeing smith for each hundred horses and one extra smith to look after foot operations.

There is one Saddle Corporal, whose duties are to repair head collars, rugs, tents, shoes, etc. He has three saddler assistants.

Each hospital is allowed thirteen horses, one for each officer, one for the non-commissioned officer doing detraining service, and one for the farrier.

The field hospitals are located on the lines of communication convenient to shipping stations. They are fully equipped to handle about 1,250 horses. The field hospitals are supplied by the mobile hospitals which are located nearer the activities of the army. There is one mobile hospital allowed for each division of the army and cavalry brigade. When the troops are stationary the mobile sections may be utilized for the treatment of a limited number of cases. The buildings are mostly temporary and can be readily moved. They are allowed one veterinary officer, two corporals and seventeen privates and are assisted in certain ways by the farriers with the army. Most of the cases sent to mobile sections are evacuated as soon as possible to the base hospitals. Only the minor cases or those that can be cured in a few days are held for treatment. The mobile sections are equipped with food and supplies for rendering first aid and attending to emergency cases. These sections are supplied direct from the field of activities.

A veterinary officer is attached to each regiment of cavalry, brigade of artillery, brigade of infantry, divisional ammunition column and divisional train. He is mounted and armed. He is attached to the brigades or units and is under the command of the brigade or unit commander for discipline. He conforms to all regulations regarding billeting, dress, etc., in force in the brigade. He is under the orders of the Assistant Director of Veterinary Service in regard to all veterinary matters. All units are instructed to report urgent calls for the veterinary officer to the brigade headquarters. The veterinary officer is assisted by a sergeant army veterinary corps. There is one with each infantry brigade battery, and ammunition column. He is a non-commissioned officer, but not a veterinarian. He is required to visit each unit of a brigade daily, supervise the dressing and treatment of all sick, and attend the veterinary officer on his round. Sick and injured animals are reported to the sergeant as soon as possible and he in turn reports to the veterinary officer any serious or urgent cases of sickness, or injury, and all cases of transmissible disease. It is not so much the duty of the veterinary officer to treat sick and injured horses as to retain the animals of his unit in an efficient and serviceable state. In order to do this he must give it his constant personal supervision. He is at all times on the lookout for the first symptoms of a transmissible disease, the loss of condition, faults in the stable management that may cause preventable injuries, faulty shoeing, etc. His time is so much occupied with work of this kind, that there is but little time left to do operations, dress wounds, or give very much attention to individual cases. He, therefore, sends, as soon as possible, all animals except minor cases to his divisional mobile section. Animals that are seriously injured or considered incurable are destroyed at once.

Aside from the veterinary officers assigned to field hospitals, mobile sections and field units, two are allowed for each remount section, a certain number are on transport duty and others with remount officers assigned to purchasing animals. There are something over a thousand veterinary officers connected with the English Army Veterinary Corps. Some of these men have spent from twenty to thirty years of their professional life with the army. Others are from the ranks of private practitioners. Many of the best English speaking veterinarians in the world are with this service. All are satsified with the organization of the corps and the

manner in which the work is conducted. All are thoroughly educated and a credit to the profession.

The organization of their magnificent service has required years of hard work, study, and experience. It had its beginning in the South African war. With constant hard work the plan of organization was completed and put into operation just in time for the present conflict. No country has done more than Great Britain for horse breeding in general. This has been proved by the many valuable, useful breeds, families and individuals that have been produced in that country. The British are as good horsemen as the world has ever known. It is but natural that they should evolve a plan for caring for horses in war that would be effectual. War is a system of extermination and the horse is not excepted. The conservation of horses in war is an economic proposition. England is thoroughly organized and fully equipped to do everything possible to conserve the animals in war and reduce their amount of necessary suffering to the minimum.

From a veterinarian's point of view, the French Army Veterinary Service is not so well organized. The veterinarians are equally as well educated and trained in military affairs as the English veterinarians. Both are required to have a four year's preliminary or high school education at least, and a four years' professional course in one of their own recognized veterinary schools before they are qualified to take the examination for admission to the army. Successful candidates are then required to serve one to two years in a military school. They are veterinarians with a cavalryman's training. Promotions are made by merit only. By the time a veterinarian has gained a position of authority in either army, he has been thoroughly trained and tried. The French Veterinary Service was not properly organized and outlined before hostilities began. There has been no time for deliberation on these subjects since. The French veterinarians are not complaining, but are doing their best under the conditions as they exist and getting good results. After the present conflict is over, it will probably be possible to outline a plan of organization that may be even more perfect than the one in use by England at present.

The principal aim of the service in both armies is to prevent disease and injuries in every possible way. The list of diseases and injuries are but little different than those found in civil life. Of the large number of horses seen in the various hospitals, a com-

paratively small percentage were afflicted with wounds. There were many cases of quittors, poll-evils and fistulae. The results obtained in treating this disagreeable class of cases were unusually good, much better than ordinarily obtained in civil life. But little medicine is used in treating either surgical or medical cases. Much more is accomplished by cleanliness, good care and sanitation than was possible in former times where more dependence was placed upon the use of medicine.

Both armies are giving special care to the subject of controlling glanders. In previous wars, it has never been possible to do so much in this line. The great improvement is due, of course, to the modern methods of diagnosis. In both armies the intrapalpebral test is most generally used. The subcutaneous test is used to a certain extent. The ocular test is in bad repute and has been used but little. The serum tests are not used for the reason that satisfactory results are obtained by the use of mallein and they are not equipped to make blood tests on a large scale. Practically all the horses in both armies have been tested for glanders. This is true of all horses from over seas. Many have been tested several times. All clinical cases and all that react to the test are promptly destroyed. Of the horses that pass through the hospitals, all are tested once or twice and the records show less than one case of glanders to the thousand tested. War has always been a prolific means of spreading glanders and the trouble would continue for many years after peace had been declared. It is believed that the present war will be an exception in this respect. If so, it is not possible to estimate the saving to agriculture and horse husbandry in general from this dreaded disease.

Both armies are fully equipped to give the necessary care and attention to diseased and injured animals. In neither army has it been necessary to call for assistance from outside sources. Considerable assistance has been accepted by each. There is always a certain amount of anxiety on the part of persons interested in humane measures lest there should be unnecessary suffering. It is possible for such people to do many things that add to the comfort of animals and the pleasure of those having them in charge. Provision is made by the English army for handling this question. They have a provision which states that all voluntary offers of veterinary assistance must be approved by the Army Council, and if accepted, will be controlled by the Director of Veterinary Serv-

ices of the forces in the field. This provision was adopted for the reason that the work would be properly supervised and the charity could be most profitably spent. At the beginning of hostilities the Royal Society for the Prevention of Cruelty to Animals volunteered veterinary assistance. The offer was accepted by the Army Council. This society is one of the oldest organizations in the world that has to do with the prevention of animal suffering. E. C. Fairholme of London is the Secretary. He enlisted in the veterinary corps and has been promoted to the rank of Captain. He is located at Brigadier General Moore's headquarters. Brigadier General Moore is Director of Veterinary Service for the English Army in France. Captain Fairholme is in a position to know how diseased and injured horses are handled and what is most needed. Through his society at home, he has been able to obtain funds that have assisted wonderfully in caring for animals. In many cases hospitals have been built and equipped for the veterinary corps. The society has provided horse ambulances, rugs, blankets, etc. The charity is all distributed under the supervision of the Director of Veterinary Services. The society and veterinary corps are in perfect harmony. One hears nothing but the highest praise for all the efforts of the humane society. This is the only society which is authorized to solicit or collect money or supplies for the veterinary corps and the only one recognized by the Army Council or that has assisted the corps.

The French army has accepted assistance from two humane societies. One is the Blue Cross which is a branch of the Dumb Friends League in England. The other was the Purple Cross which was organized in France. While the French army has accepted assistance from these societies, it has recognized neither. The Purple Cross met with financial reverses and has abandoned its work.

The Blue Cross was organized at the time of the Balkan War. It has furnished considerable assistance to the French and Italian armies. Its services were most appreciated in the beginning of the war. At that time the French were badly prepared and the Blue Cross promptly established a few base hospitals and were able to care for a good many horses before the regular army service was prepared to do so. It has continued to assist in this way up to the present time. The work is not under military regulations. As compared with the work of the English Veterinary Corps, there is

no comparison. Those engaged in the Blue Cross service are doing faithful, conscientious work, yet it is believed that more could be accomplished now if the money were turned over to the Army Veterinary Service as it is in the English Army.

Much has been accomplished by the veterinary service in the present war. The greatest progress has been made in the manner of organization. Veterinarians in the United States should keep in touch with this progress and assist in every way to bring about the most valuable veterinary service for our own army. This can not be done in times of trouble but s h o u l d be carefully and thoroughly studied and organized as soon as possible. The United States Army has acted wisely in sending Dr. Hill to France to make observations on their veterinary service. He should be kept there, if possible, until the war is over.

We have been awarded the much deserved rank. Let us keep up our interest until our Army Veterinary Service is properly and thoroughly organized. A properly organized veterinary service will not only increase the efficiency of the United States army, but it will also encourage our schools to maintain a high standard of requirements. A large proportion of our schools already require the four years' high school preliminary education and four years' professional training in veterinary medicine.

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DISCUSSION

DR. TURNER: Dr. Marshall's paper has overcome me in such a way that I hardly know how to express myself, because of the wonderful organization which has been given to the British Army. One fact stands out alone in my mind, when you think of an army having 1200 or more veterinarians, and where a thousand horses are given the attention of 350 or 360 men. Think of it. It is rather to be observed that in our army at an average post where we have 900 or 1000 horses, that we have one veterinarian, and two stable orderlies to do the work. Secondly, the paper which has just been shipped to us from the quartermaster's department—did you notice that this poor fellow down in Panama could not send us this paper himself, but had to transmit it by order of Captain Hawkins? That must have amused Dr. Marshall very much, transmitted by permission of Captain Hawkins, whoever he is. It is illustrative of the condition that exists in our army today. It will not exist six months from now. It illustrates the fact that our present veterinarians occupy the position of civilians, and are absolutely under the control of laymen who are fighting men.

Dr. Marshall's paper draws out another point, that in an organization which stands on its own bottom, where it is responsible for its actions, where there is a veterinary head, and I suppose a veterinary tail that goes with a veterinary head, where the veterinarians are held absolutely responsible for their horses, for their medicine, for their remounts, for their stables, and there are no interfering laymen; that the loss from glanders has been about one in a thousand. When we think of our little war of 1898, with the few horses we had assembled, and think of the amount of glanders which existed, it shows the value of a properly organized veterinary corps. The condition existed in those days when veterinarians in civil life had to go to their United States District Attorneys to protect themselves against the exploitation of army officers in selling glandered horses in their respective neighborhoods. It is pretty tough when you have to go to the courts to protect yourselves against your own army. It surely shows the patriotism.

Dr. Marshall is to be congratulated on the opportunities given him. I doubt if any army veterinarian could have had such opportunities. He seems to have been happy first in his selections and in the people he went to. Then again, the man himself counts for a great deal. Most of us could not get around like Dr. Marshall did.

We will be criticised in our country, those of us who have been interested in the organization of a veterinary service; and I see a lot of us here today, in fact I suppose two-thirds of those assembled have aided in the organization of our veterinary service. They will wonder why we do not have something of this kind. We are now starting an organization just about where England was 75 years ago; but, don't be faint-hearted. We will get along some day. You all remember Dr. Huidekoper; there is probably no man in this country who ever gave so much thought to the subject of army veterinary matters as did he. He said a war would bring us an army veterinary corps. Well, it wasn't a real war that we had. If we would get a great war, we will get a veterinary corps, but it won't be until after the war. England did not get her veterinary corps until she had been thoroughly disciplined by the Boer war. She saw the advantages after the Boer war. As Dr. Marshall said, it is too late, when war starts, to organize a corps, but we will get ours after we get thoroughly trounced. We will get it some time, but we have to have a start. Do not be disappointed by this little organization that we have at present, because I can see in it a growth.

The Signal Corps of our army, which is an independent corps, started about twenty-five or thirty years ago, started with a few first and second lieutenants, and now they are independent. When we asked Congress to commission us this year, we had that everlasting old argument put against us, that we were trying to inject another bureau into the military service. I don't know what is

the matter with this bureau. It seemed to be a sort of a big fellow too, but every time you try to get a bureau in Congress, everybody jumps on you. So we had to say to them, we won't have another bureau, we will just have an inside wheel of another bureau. It was put up to Dr. Hoskins and myself and some others to say where we will have this; and we thoroughly agreed that, if the Lord would ever forgive us, we would never go to the Quartermaster for it. We have been so tired of taking orders from laymen; and here this letter comes in today; so we agreed that the best place to put the veterinarian, if he must be placed under some officer, was under a trained medical officer. So we agreed to be put in the medical corps. That is the best corps in our army, the best educated, the best organized corps we have in our service. With that in view we thought if we got in their band-wagon, we would probably be organized along the proper lines. I have no doubt at all that after this little excitement is over on the border, and when the Surgeon General of the army and his able assistants have time to thoroughly think this matter over and have time to go into matters which Dr. Hill will bring back from Europe, and which Dr. Marshall's paper will evolve, we will see a great change in our service. I cannot help but think that they will not be satisfied to have an inferior corps of inferior men that are not earning their money in their corps.

It can be seen today in the dental corps. The dental corps in the medical department of the army started just like we are starting, but nothing like the rank; they started as first lieutenants. By the way, General ———— had to go in and serve a year without any shoulder straps, as a civilian, at the post until they found out whether he was a gentleman or not. I glory in the fact that our profession has been taken in as gentlemen. There is nothing at all about taking them in without shoulder straps for a year; but the man is put on the basis of all other officers, except that of the graduates of West Point, inasmuch as we must put on a six months' probationary service. That is proper and right. A great many of you men are well qualified to be practitioners in civil life, but you would be absolute failures in military life. Some men cannot stand discipline; we have too much of that American spirit, you know. That won't do in military life; a man who cannot stand discipline, who cannot obey orders, cannot give orders; so that naturally a great many of the young men who go into the service will not be successful, because they will not be able to stand the gaff. When we think that the veterinarians have been made majors in our service, that is, up to and including that rank, we are to be congratulated when our sister profession, the dentists only started in as first lieutenants. I simply voice today our sentiments, and try to defend ourselves against any criticism that we did not become an independent corps. It wasn't possible. It may be possible in the future. We are on about the same basis today as the Russian army.

The Russian army veterinary service is included in their medical service, as a great sanitary corps of the army.

I believe having our big brother, the medical corps, to sort of brother us and father us at the same time, that we will succeed in the end in getting a thoroughly oganized veterinary service. I certainly congratulate our brothers from Canada on the fact that they have the most efficient service, after hearing Dr. Marshall's paper, that could possibly exist, and the results are showing themselves.

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SHIPPING FEVER FROM THE ARMY STANDPOINT*

W. G. TURNER, Corozal, Canal Zone, Panama.

You, no doubt, have heard as one of the many Army grinds, that,—"The sun will set tonight at 6:27, by order of the Secretary of War", and while there is no desire on my part to offer any excuses for presenting this paper to your learned convention, still with Battle Creek being a suburb of Detroit, you might expect a "*reason*". It is similar to the setting of the sun, as above quoted.

Of course there is shipping fever among horses and mules, just as sure as there is a Santa Claus for the kids. Both have been officially recognized throughout the entire land, for both are universal. In the former, however, as far as the writer knows, there has been no specific organism isolated; while in the latter the old microscopic Pater Familias Osteoblast, has long been isolated, attenuated, stained, etc., etc., and a specific remedy has been recommended, which the writer hopes to try soon (increased pay).

The first mention I find of shipping fever in army horses is that of Rusius, who says: "Great losses occurred among the war horses of Rome in the year 1301".

That shipping fever includes every disease of the respiratory tract—strangles to purpura hemorrhagica—is a statement upon which I fear no argument. That it is, and always has been the bane of the horse and mule buyers existence, will not be denied. It undoubtedly has been the direct means of causing more dealers to discontinue the business than all other causes combined; and an additional goodly number to count their profits in "dead ones" and accept a meagre living for their efforts.

*Presented at the meeting of the A.V.M.A., Section on Practice. Detroit, Mich., Aug. 23, 1916.

That the buyer does not suffer equally with the seller is only because there are more of him, he does have to stand his proportional loss. In normal times (some of you may recall them) our army is the largest individual buyer of horses and mules in the country, requiring in the past, something like three to four thousand remounts of all classes per year, hence our proportion of the risk of loss, of the grand total, is the largest; we have been superseded on this point, however, during the past two years.

By virtue of the army being the largest consumer, the army veterinarian, has no doubt, more "shipping fever" in the form of influenza, epizootic cellulitis, pink eye, catarrhal fever, typhoid pneumonia, pleuro pneumonia, strangles, etc., etc., to contend with than the average practitioner.

In making this statement and assuming that you gentlemen will concede the point, it should naturally follow that some of us should step forward with at least a few helpful suggestions, but even after more than twenty years' service, a large portion of which was spent on the shipping end, with little more than a year on the receiving end (Chickamauga Park), I am afraid that, personally, I have little, if anything, to offer as a practical remedy that is new.

In saying remedy, preventive remedy of course is what is meant. The only allusion I would beg leave to make, to the treatment of shipping fever (all of them) is to urge a maximum of sanitation, hygiene and nursing, with a minimum of medication: —serum therapy may be.

I have long held the opinion that the real exciting cause of shipping fever is the actual shipping, the railroad ride; of course, there are other contributing influences, many of them. Let us say for instance that a car load or more of horses, usually young ones, are assembled at a country point. They are loaded in the evening—you know all "stock trains" come to all points in the evening; that means the horses must be loaded between five and seven o'clock for the fast?? freight which is due at 7:21, but "unavoidably detained" until about midnight. In the meantime the twenty to twenty-five horses loaded in what is called a common stock car (of the open work variety) arranged snugly that they may ride better and with less liability to injury, gradually become nervous, restive, and irritable from the close confinement, the strange surroundings and the excitement of passing trains (going the other way) and by the time the freight train does arrive and the crew

switches the stock into the train (gently of course), the horses are in a profuse and frequently a dripping sweat. In this condition they are hustled along across the country at a thirty to fifty mile per hour rate, into and through the variable currents of wind, a probable rain, sleet or snow, thrown in for good measure, with the inevitable result that they are immediately chilled to the proverbial marrow. This is shock number one, and succeeding shocks are limited only by the distance traversed. Stops at division terminals are, it seems, necessarily long ones, the car or cars are frequently stopped, with a long warehouse or other such building on the one side and a row of freight cars on the other, when the Turkish bath process again becomes active and when ready for the "drying room" they are, instead, whirled out through the country and once more exposed to the cooling influences of the omnipresent breezes. This process continues throughout the journey with the result that thus enervated and more or less exhausted from the over-taxing of the heart to accommodate the extreme sudden changes, the animals seem to become a veritable incubator for the multitudes of bacteria, which we know are constantly on the lookout for just such susceptible prey as these animals have become, and upon or soon after arrival at their destination from ten to ninety per cent of the number develop some phase of shipping fever, which may prove to be strangles, pleuro-pneumonia, or any one or more of the formidable list of respiratory diseases.

Then we have the horse or mule procured at the big commercial horse centers; these animals, probably purchased by the country buyer, are shipped to one of the numerous smaller markets, are then purchased by the fellow from the larger centers and re-shipped to his commission man. The next purchaser gets his horse or mule with at least two shipments to his credit (or discredit) plus the further possibility, yes probability, of having come in contact with animals in which "shipping fever" had already developed.

Through the insistence of the Quartermaster General and in one or more instances with the co-operation of the state veterinarian, strenuous methods were adopted in a thorough cleaning up of the entire plant of at least two of the big markets. The dealers entered into the scheme enthusiastically, and after seeing the good results attained, have since set aside one day per week for cleaning and sanitation.

I believe, as a general proposition, that the sanitary conditions obtaining in sales stables and markets—large and small—throughout the country are much better than they are usually given credit for. The one outstanding, crying deficiency in practically every horse or mule stable or barn that I have seen, is the ventilation. Allowing that a well horse requires about one hundred and twenty cubic feet of fresh air per hour and a sick one at least one-third more, if one were asked to estimate the quantity of fresh air available in these places per animal, with an average run of stock, stabled, I think, they would have to divide the allowance by four; and then be plenty high in their estimates.

We all know the contaminating influence of such a condition and in my opinion, it is a big factor in the propagation and intensification of "shipping fever".

The army always insists upon having its stock cars in a state of good repair, free from nails or other projections which might injure an animal. The cars must be scrupulously clean, disinfected and bedded with sand. These are precautions that would return good interest, for the effort, to every shipper, but it is too often entirely neglected.

It is with genuine regret that after having vaccinated thousands of horses and mules, using several of the best known equine serums and anti-toxins, I am unable to submit any data as to the results, on this most important subject, for the reason that I was on the shipping end and returns from the various points are spasmodic, incomplete and frequently unofficial.

During my connection with the remount service we requested and were granted authority to vaccinate nine horses in each car of eighteen (at that time we were using the stalled car) and allow the other nine to go untreated; but owing to the difficulty of providing for the professional and official observation of these animals for the period of not less than thirty days after arrival at their respective posts, the plan was abandoned. Had it been possible to carry out this scheme on three or four hundred animals, it would have furnished the most practical and in fact the only tangible data of its kind that I know of, on the real value of preventive serum-therapy, but alas, etc. Occasionally we would hear from a shipment that had gone a long distance under adverse weather conditions, and landed in fine shape, we would immediately wax enthusiastic over the particular serum we were using at that time,

Again I recall on one occasion we sent a fine load of horses to a Post, treated with the same serum, and while they were on the road, some four or five days, the conditions were normal, yet the verdict came back of "contagious" pleuro-pneumonia in three horses upon arrival, developed en route, and some five or six more in the following few days, several of which died. Then we wondered whether we had vaccinated or inoculated.

I am firmly of the opinion that like the sanitation of the stock car, particularly for the initial shipment of the fresh country horse, if the maximum of prophylaxis is to be attained, his vaccination should also begin with leaving the farm and not to be deferred until he has been subjected to the discomforts of shipping, exposed to infections, and surcharged with disease before receiving the prophylactic treatment. Of course subsequent injections of serum should be administered when indicated.

We have on several occasions had young horses (three and four years old) gathered from a neighborhood and *led*, not shipped, to a clean, sanitary farm stable furnished by the contractor, we would select our load of colts, ship them and the contractor would proceed to assemble another bunch for inspection at a later date. So long as he was able to procure his horses within a *leading* radius there were no signs of disease, but just as soon as he got far enough away from his rendezvous to necessitate his shipping by rail, just so soon did the inevitable shipping fever (in some form) make its appearance.

There is another great element of probable infection, and that is the feeding yard or pen, provided and mismanaged by the railroads. The legislators, no doubt, enacted wisely and humanely when they wrote into the statutes the law requiring the unloading of stock in transit, at least once in every 24 to 36 hours for recreation, rest, etc., but they should have gone a step further; and this without embarrassment to our great common carriers (not the kind you are thinking of) and insisted upon a clean, sanitary, uninfected and covered pen or yard in which to unload stock, and not the quagmire of filth and contamination too often found. These conditions can and should be overcome.

In this connection a thought suggests itself:—Would the horse-express-car with its extra capacity (from 28 to 30 horses) its greater likelihood of always being clean, its scheme for ventilation, without exposure to wind and weather, the elimination of laying on sheltered

side-tracks, as well as the avoidance of the feeding yard, and the cutting down of the time in transit by two-thirds, deliver these young fresh recruits to their destination free from shipping fever? There is a strong probability that it would, and I believe it is worth a trial.

Many eastern shippers use this system exclusively in shipping horses from markets, having had all of the exposures mentioned and still they do it because it pays them, no doubt.

The proper kind and quantity of feed to be fed en route is a much mooted question, but I want to hazard my opinion, nevertheless. I believe as a rule they are over-fed rather than the contrary, that grain of all kinds should be eliminated entirely from the ration, except in specific instances, and whenever possible, alfalfa hay (leafy and well cured) should constitute the main sustenance; it is a laxative and diuretic, hence is a febrifuge; and in a wide observation of its feeding I have never seen any of the ill effects so erroneously ascribed to it. The foregoing has reference to remounts only; of course *fresh clean* water should be given *ad libitum.*

In peace times, the buying of horses and mules for our army is done largely from March to November; and wisely too, for the months of December, January and February are the least desirable in which to make shipments, especially of long distances, owing to the weather conditions; besides by staying out of the big markets,—where after all we must go for large numbers within specified periods—we avoid the competition of the southern buyers whose season this is, and his "sugar" mule and "turpentine" mule is our best wheeler, his "cotton" mule is our best leader, his "miner" is our best pack mule and the best of his horses known commercially as the "top southerner" is the class that furnishes a large number of our cavalry and riding horses.

It is not surprising that our old troop horse—he of a year or more service—rarely, if ever becomes a victim of shipping fever. In the first place he is largely immune, having had his ordeal as a recruit, secondly he is more or less of a traveller, does not get excited about it and knows how to travel. Latterly and paramount, he comes from perfectly appointed stables, so far as sanitation, fresh air and highly efficient stable management are concerned; in fact is a seasoned and conditioned horse. He is usually transported in numbers great enough to warrant one or more trains, he is accompanied by the troops, who are commanded by efficient

officers, none of whom will permit of his abuse by being walled in on some side-track, with all fresh air excluded, nor will unnecessary delays be countenanced.

In conclusion may I hope that somewhere in this conglomerated thesis, essay, paper or what-not, that my earnest effort, though ever so feeble, may carry some message, suggestion, word, or thought, original or otherwise, that will in some way inure to the benefit of the Army Remount Service, to our chosen profession and to man's best friend, the horse (and mule).

TEACHING PHARMACOLOGY*

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In the present day and age when so much pro and con is said concerning medicinal agents, when drugs are either ridiculed as worthless or worshipped as miraculous, it is high time that the underlying causes be ascertained and the remedy applied.

Pharmacology is as definite a science as any other branch of our professional studies, and it is a topic that should engage our most careful study and attention, in view of the fact that the practitioner is daily brought face to face with conditions where medicinal agents are called for, and it is our observation that he who denounces medicinal agents most is the one who has not paid the proper attention and study to the subject, but is ever ready to note down formulas and receipts of the most ridiculous kind and being unable to analyze these combinations, as well as not knowing the action of the individual drug, the whole matter becomes a faith cure. I feel that no man should give medicine without knowing and understanding its action.

The existing erroneous ideas with reference to drugs must have a cause and you are entitled to inquire the reason for this. As a whole, we are agreed on the main facts pertaining to pathology, bacteriology, physiology, but when it comes to medicine and therapeutics, then the existing ideas are vague, erroneous and antagonistic.

After carefully looking into this matter for a number of years,

*Presented at the meeting of the A.V.M.A., Section on Practice, August 21-25, 1916, Detroit, Mich.

I have arrived at the conclusion that incompetent and indifferent teaching methods are the primary causes. How many instructors have we who have paid any special attention to pharmacology? Is it not a fact that in many cases, an instructor is selected, not with special reference to his fitness, but because his services can be obtained at a very low rate? And, for the reason above stated, the recent graduate is usually selected and fortified with no more preparation or special training to teach the subject of medicine than was handed the new "Prof." by his teacher. He starts in to impose upon the unsuspecting student.

The student, before entering college, must, by some sort of an examination, give evidence of his fitness to take up the work, but what is there to protect the student against the unfit teacher?

Much of the teaching of medicine lacks detail, the student is informed there is a drug named "thus and so", the preparations and the dose are alluded to in a general way, followed by a tirade of personal experiences of wonderful cures, the blackboard is covered with fanciful prescriptions, and all the student has retained is the drug, the cure and a selection of specific prescriptions, but left absolutely without any foundation that enables him to reason for himself.

I feel that any information that cannot be reasoned out is, in many instances, absolutely worthless, although it is conceded that many drugs in common use are prescribed purely on clinical evidence.

Another reason that, in a measure, excuses the condition just alluded to, is lack of time. It is absurd to think that only fifty hours during the school term should be given to this subject, a subject that in spite of criticism and superstition, must be mastered to practice successfully.

Laboratory work has, in many cases, been entirely ignored and I believe it is generally conceded that one obtains a more thorough knowledge by actual demonstration than by the lecture method alone. If this is not true, why laboratory anatomy, bacteriology and pathology? We consider laboratory work in materia medica, pharmacy, pharmacodynamics, incompatibility, not only essential but absolutely necessary, in that it gives the student a degree of familiarity with medicinal agents that cannot be obtained otherwise, and should also prove intensely interesting.

To understand a drug means a great deal. It means first of all to know its source; is it a plant or is it a chemical combination? In the former case, the plant should be thoroughly described; in the latter case, the physical and chemical properties should be thoroughly studied. Again, if a plant part is used, it should be made clear to the student that the plant contains certain active constituents and that the United States Pharmacopoeia demands a definite percentage of strength present.

The official preparations and dosage, the action throughout, the question of absorption and elimination, the toxic action and antidotes, question of incompatibilities, chemical, physiologic and pharmaceutic, the indications for use and training in prescription writing; all these points must be considered.

In the study of drugs, I feel that the student should have free access to the drugs under consideration, or better still, be in possession of the same. In case of plants, I have not gone beyond the general appearance as I consider plant histology superfluous, however, in the study of the inorganic drugs, such as the various salts, a more thorough method was insisted upon.

The student is supplied with blanks and the following outline is followed: Observe appearance as to color, form, etc.; note its odor and taste, observe its behavior in the presence of air, as to whether it remains unchanged, hygroscopic, deliquescent or efflorescent.

The question of solubility is ascertained and the reaction is noted by means of litmus paper.

It is my experience that by insisting upon the student working out these problems for himself, it gives that intense degree of familiarity that simply lecture work will not give, and enables the student to identify the drug. If, however, the student is not positive as to the character of the drug, a simple chemical test should be given.

The question has arisen in the minds of the students, why all this? I will get familiar with this as I go out in practice and handle these drugs, and I will know all about them. If that instructor will only tell me what that drug is good for and how much to give of it, that is all the information I desire. Our reasons for insisting upon this work being carried out are not alone because of the scientific value but because of the actual practical necessity of it.

Supposing a label should accidently be removed from a con-

tainer, it would mean that unless we had some way of getting at the contents, it would be lost. It is true that in many instances, a drug can be recognized by its appearance, but many cannot; it is true that the crystalline forms of magnesium sulphate and zinc sulphate are quite similar in appearance, but when a student, a few years ago, took a dose of zinc sulphate instead of magnesium sulphate he knew the difference, hence the appearance is not enough to know, but if the student had stopped to taste of it he would have known the difference. The odor very often enables us to identify the substance. The question of odor should also be considered in dispensing as no mal-odorous drug should be dispensed in powder form if you want the animal to eat it.

Permanency of the drug is of practical importance to remember as it would be rather embarrassing to the practitioner if he should forget himself and prescribe a deliquescent substance in powder form.

We cannot prescribe intelligently unless we know something about the solubitity of the substance and the reaction has many important sides and should be known. If we are not familiar with the reaction and we prescribe alkaline salts with alkaloidal salts, dangerous precipitation may occur; again the reaction of the salts is of practical importance as this has everything to do with the physiologic action.

As an example, potassium nitrate, potassium bicarbonate and potassium acetate are all classified as diuretics and yet there is a great deal of difference in the action, due to the difference in reaction, thus your nitrate is neutral, the bicarbonate, alkaline and the potassium acetate, neutral.. The bicarbonate neutralizes gastric acidity, is absorbed as a carbonate, increasing blood alkalinity as well as increasing the alkalinity of the urine. The potassium nitrate, on the other hand, is a neutral salt and is broken up into ammonia and urea. It does not increase blood alkalinity nor does it influence the composition of the urine, but rather increases diuresis through irritation and possibly through dilation of the renal artery.

Potassium acetate being neutral, does not affect the stomach but is converted into carbonate in the bowel and after this its action is identical with the bicarbonate. Much more could be said about the importance of reaction.

As a pre-requisite to the study of organic drugs, the student should be familiar with the fundamentals of botany, at least enough to read and understand the botanical terms used, so that by means of a text book on botany, they might be able to identify a plant. The necessity of this should be especially evident when we consider the annual losses from live stock eating poisonous plants.

We should be thoroughly familiar with the active constituents of that plant, whether an alkaloid, glucoside, resin, gum resin, oleoresin, oil, fixed or volatile, or a mixture of several of these. They should not consider it sufficient to merely know the active ingredient but to be thoroughly familiar with the physical and chemical characteristics of each of these.

Just a practical point or two in this connection; do not buy any acetic extracts, the active principle of which is a glucoside, as glucosides are broken up by acids and made inert; equally ridiculous is an acetic extract of cannabis indica, inasmuch as the active principle of this plant is a resin and resins are not soluble in acetic acid.

Lobelia, the active principle of which is lobeline, also contains an inert resin. Some time ago we were consulted by a practitioner as to the cause of sticky lumps occurring in a syrup after adding fluidextract of lobelia; simply a precipitation of the resin.

I have endeavored by just a few practical suggestions to show the necessity of knowing intimately the plant constituents.

The official preparations should be thoroughly familiarized, with special reference to their character, strength, manner of preparation, etc.; this latter work should be demonstrated in the pharmacy laboratory or better yet, each student should be required to make one or more of the official preparations in common use. In the pharmacy laboratory the student should also be thoroughly familiarized with the various pharmaceutical processes such as distillation, sublimation, filtration, precipitation, maceration, percolation, etc. Work of this kind gives the student a better insight and understanding of medicinal agents.

I do not mean to infer that this should constitute the entire pharmacy course.

Dosage, perhaps is the most difficult problem we have to solve in view of the great difference of opinion. German writers advocate enormous doses compared with ours, but by adhering to the average dose advocated by American writers, taking into consider-

ation the age, breed, sex and general condition of the patient, you will not go far astray. Again, it should be borne in mind that in acute conditions, maximum doses are required to a certain point, whereas in subacute and chronic conditions, the smaller dose should be selected.

Pharmacodynamics is the study of the physiologic action of medicinal agents and a topic that has been a great stumbling block in teaching medicine.

The methods pursued in the past have been inadequate and superficial. The student has, in most cases, only been told that a drug does "thus and so" and this meager information followed by flowery tales of miraculous cures, and as a result of such information, there is absolutely no foundation laid in the mind of the student that enables him to think for himself.

The action of every medicinal agent discussed should be considered in the following order: first, its action if applied to the skin, then being administered by the mouth, its action in the digestive tract and any changes it might undergo there.

The question of absorption and elimination is of special importance as the time taken to absorb and eliminate a drug is the only guide the prescriber has to govern him in directing how often the medicine should be repeated.

Our drug is now absorbed and circulating in the blood, it unites with certain nerve centers, in the brain or spinal cord, and thus by either stimulating or depressing, the drug action is obtained, thus strychnine especially stimulates the motor portion of the cord and as a result thereof stimulates the heart's action, increases blood pressure, stimulates respiration and practically all functional activity of the various organs and tissue.

The question has often been raised, how does this selective action on the part of the drugs take place? The action is purely a chemical one and may be simply stated to be one of chemical attraction.

We have stated what the drug is doing but this is not sufficient, it must be clearly brought out in every instance possible how this action is brought about.

After the drug has circulated a certain length of time in the blood stream and its energy spent, the body throws it off. Some drugs are completely oxidized in the body but most of them are eliminated unchanged or in some other form. The channel through

which the drug is eliminated as well as the form in which it is eliminated are of the utmost importance.

As many of our medicinal agents exert their most valuable influence during elimination, this particular phase of our study must be borne in mind, thus hexamethylenamine, being broken up in the kidney into formaldehyde and ammonia, exerts its action only during elimination, as a disinfectant to the urinary canal.

Galactagogues, such as anise, fennel, juniper, etc., are eliminated in part through the mammary gland, thus stimulating the glandular activity and increasing the milk flow.

Camphor, creosote, etc., being eliminated through the lungs, bring about a most valuable disinfectant, antispasmodic, expectorant action during elimination.

We have now followed the drug from the time it enters the body until it is eliminated; we have stated just how each action is brought about. We have, however, several medicinal agents in common use, the physiologic action of which has not been worked out and has simply gained recognition purely from clinical observations. These drugs are, however, in the minority.

This work on physiologic action should also be demonstrated in the clinic on dissecting subjects as well as in the physiologic laboratory and no opportunity along this line should be overlooked.

Toxicology is not alone of importance insofar as recognition of symptoms of the toxic action of medicinal agents are concerned but it should also include a thorough study of poisonous plants, such as equisetum, cockleburr, larkspur, digitalis, etc.

Again, the toxic action of drugs in common use can be advantageously demonstrated on dissecting subjects, and while the proper antidotes should suggest themselves to the student, thoroughly conversant with the action of the poison, yet a thorough understanding of the fundamentals should be presented.

We should know the value of the chemical antidotes as well as the physiologic antidote and a good point to always bear in mind is that in many cases where depression is evident, the application of hot blankets is as useful as medicine.

The indications for use undoubtedly furnish the most interesting chapter of pharmacology for the student, but the usual methods pursued are open to criticism, in that the personal views of the instructor are forced upon the student. A better method that calls upon the student to think for himself and make use of

the facts presented, is to bring out the individual ideas in a quiz by the following method: In view of the facts presented with reference to the action of this drug, calling upon the students, the instructor requests that one or more indications for its use be given, also demanding that the reason for this statement be given. This method evokes much interest and stimulates the student to think for himself.

I think it is exceedingly helpful that occasional suggestions be made by the instructor, but at all times, let the student think for himself.

Prescription writing should be limited strictly to proper form and combination and all pet prescriptions and formulas entirely omitted.

Incompatibility, chemical, physiologic and pharmaceutical, should be considered in the class and also demonstrated in the laboratory.

Give the student an opportunity by giving him a good fundamental knowledge of pharmacy, materia medica, then with the proper presentation of pharmacodynamics and the other subjects alluded to, at all times making this subject interesting, plain and reasonable, giving practical demonstrations wherever possible, and he will soon observe that there is nothing superstitious or mystifying about medicinal agents and much of the present indifference, ridicule and criticism will soon pass away.

DR. QUITMAN: Unfortunately, I came in late, but I want to compliment Dr. Jensen on his careful preparation and his well thought out plan. Judging from what I heard, what he proposes is an ideal plan. Just as soon as private veterinary schools can furnish all the facilities, I certainly would advocate taking up every one of the plans. All teachers, I think, that are honest and sincere in their teaching endeavors, realize that we should have more time and more laboratory work in the teaching of pharmacology.

CHAIRMAN MERILLAT: One thing that occurred to me in connection with this paper, is how a man could learn all that in an ordinary lifetime. I want to compliment Dr. Jensen very much on his paper.

THE MEDICINAL TREATMENT OF PARASITIC DISEASES—AN UNDEVELOPED FIELD OF VETERINARY MEDICINE

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With the exception of those parasitic diseases which are of interest from the standpoint of quarantine regulations (Texas fever and scabies) or of meat inspection (hydatid, "beef measles", "hog measles", etc.), the diseases of stock due to parasites receive entirely too little attention from the veterinarian.

One reason for this is that such animals as sheep and swine, which animals most commonly suffer from parasitic infestation, are species with which the veterinarian has little to do, aside from dipping sheep for scabies and injecting hogs with serum against hog cholera. That veterinarians treat sheep and hogs so little is due to a combination of circumstances. From the farmer's standpoint, the value of the individual sheep or swine commonly does not warrant the expense of paying a veterinarian. From the veterinarian's standpoint, the compensation to be expected from treating the individual sheep or swine does not warrant an interest in this field. For years veterinary practice in the United States concerned itself primarily with horses and secondarily with dogs. Today cattle practice is coming into its own, but aside from hog cholera work, sheep practice and swine practice are little known quantities in the United States.

The field of sheep and swine practice is one that deserves attention. The diseases that attack these animals are commonly epizootic or enzootic, and the aggregate value of the stock involved is usually considerable, even though the value of the individual animal be comparatively small. At the present time the value of even the individual sheep or swine is no small matter.

Sheep, swine and dogs are commonly infested with worms, Sheep, especially, are affected but little by bacterial diseases and suffer principally from parasitic infestation. Quite often the animals suffer from massive infestations with the usual damage due to irritation of the digestive mucosa from the movement and pressure of the worms, from occlusion of the lumen of the digestive tract, from enterospasm, from abstraction of nourishment, from

absorption of toxic products, and from hemorrhage and traumatic injury occasioned by some species of worms. The damage is most pronounced in young animals. In these animals the digestive tract is more sensitive, the mucosa more tender, the reflexes perhaps more acute. Infestations that give rise to little or no apparent injury in old animals often appear to occasion considerable injury to young animals and in some cases are the cause of death. One of the most important features in the case is the fact that young animals that are heavily parasitized commonly suffer a serious setback and frequently are permanently stunted in growth. They become unthrifty adults—"runts".

Clinically, parasitic infestation does not present a sharply defined, well characterized picture, but in a general way, one may suspect parasitism when dealing with an afebrile disease, with unthriftiness grading into emaciation and commonly accompanied by anemia and edema. Gastric and intestinal parasitism is often accompanied by more or less diarrhea or constipation. These features should be considered in relation to other facts; that parasitic worms are most prevalent in warm climates and moist localities or in wet years; that they are, therefore, more apt to be of importance in the South and along the coast than in the Rocky Mountain states or in such dry climates as parts of Arizona; and that continued use of closely cropped pastures will favor massive infestation. As a rule there is opportunity for post-mortem examination to confirm the suspicion of parasitism as the cause of trouble, for the veterinarian is not apt to be called in until the death of at least one animal makes it seem desirable to have advice. Of course, it is possible to confirm a suspicion of parasitism by microscopical examination, but at the present time there are comparatively few practicing veterinarians sufficiently experienced to make a satisfactory diagnosis in this way, especially when it involves the question of passing on whether the fecal findings indicate a common and light or moderate infestation or a massive and dangerous infestation, a rather difficult point to settle. To be sure, the presence of parasites would warrant treatment from many standpoints, but it would not necessarily settle the question as to whether they were responsible for the condition the veterinarian was called in to treat.

Most of the work on parasitic diseases of live stock in this country has been done in the federal bureaus. From the very

nature of things they have, heretofore, laid most of their emphasis on prophylaxis, something that could not well be over-emphasized. They have, however, noted the necessity and desirability of medicinal treatment, and it is well known that there are times when such prophylactic measures as pasture rotation are, for one reason or another, not feasible. An illustration of this fact that came to the writer's attention lately was in the case of two flocks of goats used as brush cleaners on Virginia farms. It was necessary that the goats feed down the brush to the point where it would die, a feature which made it undesirable to rotate pastures and give the brush which had only been lightly pastured a chance to recuperate. In cases like this the repeated use of proper medicinal treatment might reasonably be expected to gain all that pasture rotation would gain in the way of keeping infestation down to a negligible minimum.

There is an excellent opportunity at the present time for the veterinarian to educate the owners of sheep and swine in regard to the desirability of employing veterinarians to treat their stock for parasitic diseases. Live stock values are especially high at the present time, and there is less than the usual amount of philosophical resignation in contemplating dead stock. Live stock papers and farm journals are emphasizing more and more the importance of worm parasites and related pests and the need of combating them. If the veterinarian does not take occasion to interest himself in this field at the present time, he will sooner or later find himself lamenting the prevalence among farmers and stockmen of the practice of treating their own flocks and herds for parasites. There is a growing interest in this matter which marks the veterinarian's opportunity to take advantage of the situation or give rise to a regrettable situation by neglecting it. If the farmer could treat his stock as well as the veterinarian could, it would only be the veterinarian's loss if the farmer became confirmed in this practice. But this would not be the case. The veterinarian is in a position to know the latest, safest and best treatments, whereas the farmer, who cannot be so well informed, is apt to waste time and money and lose stock by the inexpert administration of ineffective or dangerous treatments.

There are doubtless many veterinarians who feel that the task of dosing a flock of sheep or a herd of swine could not possibly be accomplished in sufficient time to make it remunerative. More ex-

perience will dispel this idea. With three or four assistants, such as can usually be found on a sheep ranch, flocks of five hundred to perhaps a thousand sheep could be drenched in a day, by the use of suitable equipment, at a cost which would make it profitable to the veterinarian and the sheep owner. This means that the sheep must be drenched at a rate of more than one animal a minute, and in the writer's experience it is not especially difficult to work at that rate. With proper facilities for handling and restraint, swine can also be handled at a rather rapid rate.

The stomach worm has ruined the sheep industry in some sections. The practicing veterinarian owes it to himself and to the sheep business to cultivate an interest in the stomach worm problem instead of neglecting it. And what is true of the stomach worm is true, in a general way, of other parasitic diseases which cannot be discussed within the limits of this paper. Such prophylactic measures as pasture rotation must be carried out by the farmer and stockman, preferably under the advice of a trained veterinarian, but no adequate scheme of eradication or control can neglect medicinal treatment, and this is and should remain the veterinarian's field. But the saving of stock is the object which gives point to the veterinarian's work, and if he refuses to take an interest in sheep and swine and to educate his community in regard to the possibilities of treatment and the need for treatment of parasitic diseases by the skilled veterinarian, then the stock journals will develop in the farmer and stockman the idea that they must treat their own stock for these troubles.

—Drs. E. M. Aldrich of New Bloomfield, Pa., F. A. Baldwin of Kansas City, Mo. and H. H. Tucker of Covington, Ky. have been appointed veterinary inspectors in connection with the Bureau of Animal Industry and are located at Omaha.

—A loss of nine horses has recently been reported near Stella, Nebraska. It was believed that the deaths were due to some form of poisoning—possibly forage poisoning. An exact diagnosis could not be determined.

—It is reported that black leg was recently found in a herd of cattle near Sullivan, Indiana.

BOTULISM

A Cause of Limber-neck in Chickens.

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During the investigation of several outbreaks of botulism which have recently occurred in human beings, it was noted that varying numbers of chickens became paralyzed and died after eating remnants of the food which had caused the poisoning. In Hillsboro, Oregon, fifty chickens were affected after eating home-canned corn which had caused the death of a woman who tasted it; in Hornbrook, California, between fifty and a hundred chickens became paralyzed and died at the same time as the woman who cared for them died of "bulbar paralysis"; in San Jose, California, eight chickens showed the same symptoms and died after eating home-canned string beans which had caused the death of a woman who tasted them, and in Fallbrook, California, seven chickens died after eating home-canned apricots which also caused the death of five people.

In all the human cases the symptoms and the course of the intoxication were identical with those of botulism, and in one the histologic examination of the tissues which were obtained at autopsy showed the typical thrombosis and hemorrhages which have been shown to be characteristic of the condition. (1 & 2). The symptoms of the chickens were not accurately recorded although in one instance it was stated that the chickens developed "limber-neck", in another that they developed a cough and aphonia and became paralyzed in the necks before death, in a third that "they had the same symtoms as the women who died" and in the fourth that they became paralyzed and died about two days after eating the spoiled food.

The carcasses of some of the chickens were obtained from San Jose and from Hillsboro, and from the gizzard of one which had eaten canned corn, and from the crops or gizzards of three which had eaten canned beans, anaerobic bacilli were recovered which have all the morphological and cultural characteristics of the *Bacillus botulinus*. Cultures of both strains in suitable media produce a virulent toxin with which it is possible to reproduce the typical symptoms and pathologic findings in guinea pigs, rab-

bits and cats by subcutaneous injection, and in chickens by feeding.

The symptons of the injected animals are identical with those which have been described by van Ermengem (3) and others, and those of the chickens are quite characteristic. The birds become dull and inactive, refuse to eat, remain quiet in one place with the feathers ruffled and gradually develop weakness of the legs, wings and neck so that they are unable to stand, droop the wings and allow the beak or the side of the head to rest upon the floor of the cage. In the experimental cases death occurred within twenty-four hours after the feeding. Histological examination of the tissues of the chickens which died in the San Jose outbreak as well as in those which died after experimental feeding showed thé peculiar thrombosis which is characteristic in mammals.

The significance of these observations is of some importance in that they show that botulism must be considered as a possible cause of limber-neck in chickens. It has been recorded in the European literature that ducks and pigeons are also susceptible to botulism but in a fairly complete review of the literature I have been unable to find reference to susceptibility of other domestic fowls, although it is highly probable that they are susceptible. The fact that it has been shown that the toxin of the *Bacillus botulinus* may be formed in certain vegetables and fruits without the addition of animal protein (1) may explain the occurrence of this peculiar disease of the domestic fowl under conditions in which access to spoiled meats can be excluded.

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CLINICAL AND CASE REPORTS

"Knowledge is born in laboratories and in the experience of the thoughtful. It develops form in the journals and 'when dead it is decently buried in books'."

ECTOPIC PREGNANCY WITH MUMMIFICATION OF THE FOETUS IN A RABBIT.

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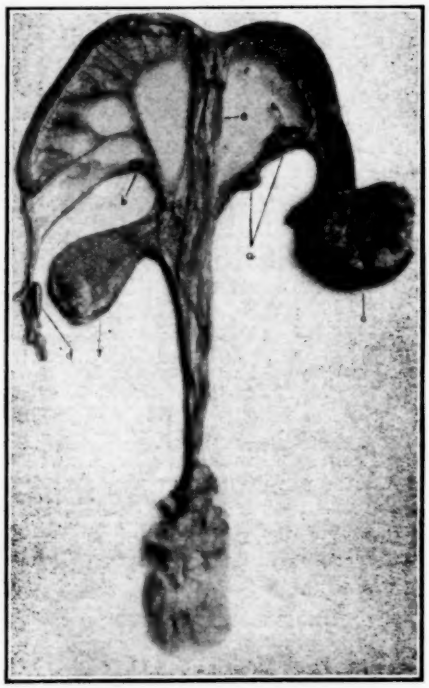
One encounters at times, most interesting anomalies and locations of foeti. The unnatural locations vary in different animals from the cornu of the uterus (although this is normal in some ani-



a, Enlarged lymph glands; b, normal lymph glands; c, mummified foetus; d, normal ovary; e, uterus.

mals) to the peritoneal cavity or it sometimes occurs that the foetus lies in close relationship with the ovary. Where the foetus develops outside of the uterus, either in the peritoneal cavity or in close relationship with the ovary, we speak of such a condition as

ectopic or extrauterine pregnancy. All such occurrences are rare. The great motility of spermatozoa makes it possible for them to travel long distances in a comparatively short time and thus before their life becomes extinct they sometimes, during their wander-

a, Cysticercus pisiformis; b, right kidney; c, left kidney; d, mummified foetus; e, stomach; f, bladder.

ings, reach the fimbriated ends of the Fallopian tubes, ovary or even the peritoneal cavity. If by chance an unfertilized ovum lies in the way of such a migratory spermatozoan, fecundation may occur which would result in ectopic pregnancy.

While conducting a post-mortem examination on an experimental rabbit an interesting case of ectopic pregnancy was found. The rabbit had died during the course of immunization against *Bacillus typhosus*, having received two injections of a killed suspension of the typhoid bacillus, dying eight days after the second injection. As is seen in the accompanying photograph the foetus is in the extreme end of the right cornu, closely adherent to the ovary. The foetus appeared to have been in the third week of development when it died. It was shrunken and mummified and closely enveloped by a membrane. The regional lymph glands in the neighborhood of the foetus were eight to ten times as large as those on the opposite side.

Another feature of interest in this rabbit was an unusually large cyst containing *Cysticercus pisiformis*. This was located in the right sublumbar region, embedded in the muscles of that region. It lay immediately behind the right kidney which was slightly pushed forward and extended from the last rib to the second lumbar vertebra. After the cyst was dissected out it was found to weigh, with its contents of 20 c.c. of cloudy fluid and parasites, 38.30 grams. It was four inches long and one and three-quarters inches wide at the widest portion and had the general shape of a plumb-bob, the widest end lying close to the last rib. This large cyst contained six smaller ones, the size of each being as follows: 3½ by 1⅜ inches; 1⅜ by 1 inch; two being one-fourth inch in diameter and two more one-eighth inch in diameter. The first of these cysts contained 174 young parasites; the second, 62 and the rest each one parasite. Three young parasites were also found free in the fluid in the cyst formed by the membrane which enveloped the other six cysts; and three were found free in the peritoneal cavity.

INTUSSUSCEPTION OF THE INTESTINES OF THE SHEEP

B. F. KAUPP, Pathologist, N. C. Exp. Sta.
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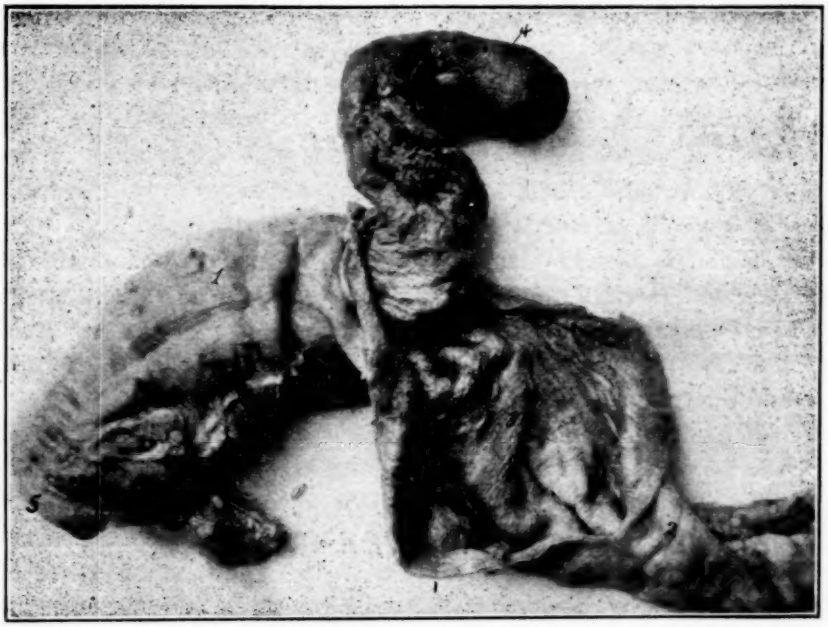
The present report is of interest on account of the apparent rareness of this condition in sheep.

A flock of Shropshire lambs, about six months old, were on Bermuda grass pasture and received a small amount of grain daily as a supplementary feed. A number of the lambs had died of in-

festation by the *Haemonchus contortus,* showing the typical lesions of edema of the chest or other parts of the body and a serous exudate poured out into the pericardial and pleural sacs. At times a quantity of serous-like fluid was also found in the peritoneal cavity. Myriads of the worms were also found in the fourth stomach or abomasum.



In the accompanying photograph may be seen a case of intussusception found in one of the cases at autopsy. No definite symptoms indicating such a trouble were recorded. No. 1 is a portion of the intestine which began to invaginate at No. 5. No. 2 is a portion of the intestine beyond the invaginated portion and 3 the open bowel. No. 4 is the invaginated and strangulated portion freed from the lumen. There is noted more or less strangulation and necrosis of the extreme end of the invaginated portion.

BLACKLEG*

W. J. HARTMAN, Montana State College,
Bozeman, Mont.

"The use of blackleg vaccine as a preventive measure has resulted, according to a recent publication of the department of agriculture on this subject, in reducing the loss from blackleg to less than one-half of one per cent. Where this disease is allowed to prevail the losses to cattle from it frequently exceed those from all other causes combined, and in certain badly infected regions have amounted to more than ten per cent of the animal calf crop."

Blackleg causes at least one-third of our cattle losses in Montana. In some districts and in some years over two-thirds of the cattle deaths can be attributed to this cause; so that taking six per cent* the average annual loss and 1,023,000† cattle in Montana of an average value of $50.00, two per cent of which would represent a loss of over $1,000,000.

This is altogether too great a loss to allow when vaccination would prevent it.

Many cattle raisers in Montana use reliable blackleg vaccine regularly and prevent nearly all losses in their herds from this cause. However, on account of unreliable commercial vaccines on the market, some of the stockmen have ceased using any vaccine at all. Where a reliable vaccine is used, such as is furnished free by the U. S. Department of Agriculture, through the state veterinarian, at Helena, and used according to directions, practically no losses occur.

A number of complaints have been received the past year of the poor quality of commercial vaccines. The following is a report of a few cases taken from different parts of the state, illustrating the experiences of some men. In all of these cases I have been careful to ascertain that the vaccination has been done properly and that the loss has not been from carelessness in the use of the pills. We found the majority of the men put all the pills in vaseline before putting them into the plunger, so that very few errors occurred.

*Read at the Montana Veterinary Medical Association, Helena, Mont., Sept. 27, 1916.

*From Live Stock Loss Statistics in the Bitter Root.

†From the U. S. D. A. Year Book, 1915.

*Details of Cattle Loss

Cause of Death	Cattle		Young Stuff	
	No.		No.	
Bloat	15	23.8 %	7	2.63%
Accident	9	14.28%	6	2.25%
Poison	8	12.70%	9	3.38%
Calving	6	9.52%		
Exposure	6	9.52%		
Pneumonia	5	7.93%		
Udder trouble	3	4.80%		
Blackleg			87	32.70%
Lung Worms			45	17.00%
Scours			36	13.53%
Born Dead			24	9.02%
Indigestion			9	3.38%
Miscellaneous	6	9.52%	17	6.39%
Unknown causes	5	7.93%	26	9.72%

*From Live Stock Loss Statistics in the Bitter Root.

C. E. Stuart of Fishtail lost five calves out of seventeen last March—four to eight months old; five yearlings out of eighteen; two 2-year olds out of twenty-four.

John Eik, Fishtail, lost five out of thirty-four from blackleg in March; three after vaccinating with commercial pills. He vaccinated the first of January.

Mr. Cash near Hamilton, who ran cattle in Ross's hole, vaccinated three times with commercial pills, yet he lost one to three from blackleg every month. After using government vaccine, he had no more losses.

Mr. Chatterton, who manages a herd of Herefords of three thousand head near Belt, lost three valuable young bulls one month to six weeks after vaccinating with a commercial vaccine last fall. He used government vaccine and had no further loss.

H. C. Drange, Shepherd, lost thirteen head from blackleg last March. He vaccinated thirty-five head December 25th with commercial pills and was very careful. After losing eleven, he vaccinated all those left with another commercial preparation about April 1st and lost two more about two weeks afterwards.

J. Groen of Huntley, lost eight from blackleg out of nineteen head. He vaccinated with pills and had no more loss.

Dr. Welch, veterinarian of the Experiment Station, and Dr. Butler, State Veterinarian, have a number of reports of similar failures of commercial vaccine. They also report cases in which the vaccine was so strong as to cause blackleg. With these reports at hand and also with the good results we have experienced from the use of government vaccine, we are advising county agriculturists to use government blackleg vaccine exclusively and to recommend it to the farmers in their counties.

In most cases the farmers do this work themselves or where they have many head of animals, they frequently call in a veterinarian to do the work as he can do it much more quickly and accurately. Until last summer we have had comparatively few reports of these failures and therefore we have not recommended the government vaccine exclusively until recently. Considering the great importance of this disease to the cattle business of Montana, I think it wise that all veterinarians have a clear understanding of the methods of prevention and also of some of the failures with vaccines as now used.

We find that ranchers use all kinds of nostrums as vaccines or as tortures, drawing on their imagination as to the value of these ancient devices and while a veterinarian may not be called to do this work in many cases, yet by recommending a safe and reliable prevention, he can be a big help in overcoming some of these false notions of copper wire and garlic vaccinations and this will aid him to win the confidence of the people he serves.

Vaccinate all cattle three months to two years of age, April 1st and October 1st.

Get Free Government vaccine from State Veterinarian, Helena.

Some commercial vaccines have proven worthless; some dangerous.

—A house warming was given at the St. Joseph Veterinary College, St. Joseph, Mo. the latter part of November to celebrate the completion of their new auditorium.

—Dr. Louis Klein of the University of Pennsylvania recently gave a paper on "The Diseases of Dairy Cows" at the monthly meeting of the Western Pennsylvania Veterinary Club.

ABSTRACTS FROM RECENT LITERATURE

CLINICAL AND THERAPEUTIC NOTES. Prof. Doct. A. Delmer. *Bulletin de la Soc. Centrale.*—In his long communication the author records his experience while at the front, relating to the action of the polyvalent serum of LeClainche and Vallee, also the action of petroleum as a modifying agent in wounds of a bad nature and on the treatment of herpes with application and friction of common petroleum.

With the polyvalent serum, where excellent results have always been recorded, he mentions a number of cases, relating to wounds in general: in an old fistula 45 centimeters in length, or deep fistula due to the migration of a piece of obus, a fistula of the withers, suppurative phlebitis following phlebotomy, an ulcerated tumor of the anterior face of the right stifle joint, a deep abscess of the superior part of the neck, a deep wound due to a complete section of the skin, of the perforatus and perforans tendons complicated with opening of the sesamoid sheath, an abscess of the mammae, a deep peritendinous abscess of the left fore cannon, a purulent collection of the sinuses following fracture of the frontal bone.

In relation to the action of petroleum as a modifying agent upon wounds, Doctor Delmer, while considering some of the advantages obtained by the use of petroleum, states that the granulating and the definitive process of cicatrization of the tissues, takes place more slowly than with the polyvalent serum.

In relation to the use of petroleum in the treatment of herpes, he considers it as an excellent therapeutic agent.

LIAUTARD.

TO PREVENT THE SPREAD OF ANTHRAX AMONG SWINE. *Zeitschrift für Fleisch und Milchhygiene,* Vol. 25, p. 351, 1915.—The Medical Commission in Bremen has issued the following warning: The increased number of cases of anthrax in swine, that have been observed in recent years, is due to the feeding of fish meal that had been fed with imported bone meal. The bone meal was not sterilized. Anthrax spores frequently contaminate such meal. Its introduction into traffic, except under declaration, is forbidden.

BERG.

UMBILICAL ABSCESS DISCHARGING BY THE VULVA. Doct. C. Fabretti. *Il Nuovo Ercolani.*—The writer was called to attend a three months old calf, which presented all the symptoms of ordinary omphalitis with a tendency to suppuration. The animal was in very poor condition, had no appetite and did not ruminate. The abdomen was retracted and the temperature elevated. Notwithstanding the treatment instituted, the calf died a few days after showing all the symptoms of peritonitis. At the post-mortem there was found, besides the ordinary lesions of peritonitis, two large cylinders, whitish, hard, dry, one in front of the other which seemed to extend from the umbilicus to the urinary bladder. Not realizing their nature and thinking that they were perhaps post-mortem findings, the author, carrying them in mind, was, a short time after, called again to advise for another heifer which had a swelling at the umbilicus. The application of an ointment was made for a few days with the expectation that fluctuation would soon be detected and the abscess could be opened. Instead of that, the swelling gradually diminished and disappeared. This change took place with the appearance through the vulva of a purulent discharge, which subsided gradually and the heifer got entirely well. The urachus in the first case had been obliterated, that of the heifer remained open and through it the abscess emptied itself.

LIAUTARD.

PARACENTESIS ABDOMINIS. P. G. Bond, M.R.C.V.S. *Veterinary Journal.*—The writer has had cases which made him conclude that this operation was not resorted to as often as it should be. After speaking of two of these cases he gives a concise résumé of five cases where he performed the operation with the satisfactory results that are frequently obtained when it is applied at the proper time and when needed.

"The region selected to operate on is fixed by drawing an imaginary line from the pin-bone to the flank. A hand breadth in front of this is the place to puncture. The portion of the intestine pierced is the pelvic flexure of the large colon on the off side." The cannula is left in place and if necessary tied with a piece of tape. It is rare that later trouble ensues.

LIAUTARD.

PROLAPSE OF THE UTERUS CAUSED BY A FOREIGN BODY. Ohler. *Muenchener Tierärztliche Wochenschrift,* Vol. 66. p. 1007, 1915. After a reposition of the uterus there was powerful straining. Injuries to the uterus were not found, although on removing the placenta it was noticed that the fetal membranes were attached to the uterus more firmly than usual. After a second reposition, it was not possible to prevent straining in spite of the use of the usual means and appliances. The animal was slaughtered.

A nail which had penetrated the reticulum was found in the diaphragm. Between the reticulum and the diaphragm were found the changes due to a recently invading foreign body. This alone I regard as the cause of the straining, insofar as no significant injuries were present in the uterus. BERG.

FATE OF MAMMALIAN TUBERCULOSIS BACILLUS IN SPARROWS AND CHICKENS. Van Es and Schalk. *Journal of Infectious Diseases,* Oct. 1916.—Sparrows fed with tuberculous material of mammalian origin succumbed in a markedly emaciated condition. They were almost entirely free from any gross lesions resembling tuberculosis.

The material fed was derived from cavias which had died of tuberculosis and which had been used for the propagation *in vivo* of three strains of mammalian bacilli, two of bovine and one of human origin. Twenty-one sparrows thus fed, with one exception, died emaciated. One sparrow showed a small nodule in the liver which contained typical tubercular material. The organism was demonstrated in three sparrows thus fed. Intraperitoneal injection of small amounts of liver emulsion from six of these birds caused tuberculosis in cavias into which it was injected.

The tubercle bacilli may maintain themselves for long periods in organs of birds without losing vitality or original virulence.

Material taken from cavias, having become tuberculous as a result of injection with the liver emulsion of sparrows, was injected intravenously into chickens, in order to see if there was a survival of the tuberculous material in the body of the chicken as there had been in that of the sparrow. Some of these chickens died at different times. Some were killed. A very small number showed lesions. A slightly larger number showed the bacilli in the organs. A still larger number transmitted the disease to cavias.

There were one or more animals in which no infection could be shown. Other animals inoculated from them, however, through

a series of two to five transmissions were proven to contain tubercle bacilli either by microscopic examination or by positive results in cavias. The authors infer that this phenomenon was due to the smallness of the number of bacilli that survived in the bodies of the birds and were missed either in the microscopical examinations or the emulsions injected.

Some chickens were fed one meal of tuberculous material and kept for six months to test the feces for bacilli. Only one of this series showed the presence of virulent material in the feces.

Nearly one hundred birds which either ingested or were injected with mammalian material enter into the summary of results as regards the mortality. Sixty died and thirty-seven were killed. Those that died became greatly emaciated near the end; those killed were in a perfect state of health and nutrition.

The authors conclude that since the bodies of birds retain the organism for long periods, with their pathological characteristics fully preserved, it is possible that birds may serve as intermediary carriers and transmitters of mammalian tuberculosis.

HAYDEN.

GERMAN CROWN PRINCE PRAISES THE VETERINARIANS. *Zeitschrift für Fleisch und Milchhygiene*, Vol. 25, p. 384, 1915. The Crown Prince has issued the following command: I have been informed that the development of the veterinary hospitals which are so necessary to the maintenance of our horses has been going on very favorably throughout the entire army. This is due to the far-sighted and ceaseless activities of the veterinarians in charge. I thank them and all the other veterinary officers in the army. They have distinguished themselves in all branches of the service, especially in the difficult and comprehensive work of the prevention of disease. The Commander-in-Chief, William; Crown Prince of the German Empire and of Prussia. BERG.

COITAL OR VESICULAR EXANTHEMA IN THE HORSE. R. C. Hancock, B.Sc., M.R.C.V.S. *Veterinary Journal.*—A mare which had been served a few days before by a local stallion, had the vaginal mucosa presenting three or four marked raised ulcers, flat-topped, and about the size of a six-pence. Their surfaces were of a bright red color and their appearance was as if they had been stuck on artificially. There was another ulcer on the hairless skin of the vulva

and one on the buttocks, where the penis could easily have come in contact during copulation. There was a yellowish discharge from the vulva.

Washing twice a day with a solution of Lysol brought the mare to health in ten days

The case was evidently mild and might have gotten well without any treatment. LIAUTARD.

INTESTINAL AFFECTIONS DUE TO PECULIAR MECHANICAL CAUSES. Bress. *Münchener Tierärztliche Wochenschrift,* Vol. 66, p. 1008-1010, 1915.—In a year old bull calf, heavily built and in good flesh, a strong, woody clover stalk as long as a finger became lodged transversely in the ileum; the intestinal walls were held apart and partly perforated by it. Following were the findings after emergency slaughter 2½ days afterward:

At the site of injury the intestinal mucosa was necrosed and appeared black-gray in the deeper layer. There was strong injection of the vessels in the parietal peritoneum. The contents of the omasum were somewhat drier than usual. Otherwise nothing abnormal was found.

Clinically the following was determined: sudden appearance of colic symptoms. The animal strikes the abdomen with the hind foot, lies down and gets us, groans a little; there were slight convulsive twitchings of the glutei muscles. The animal refused food, sounds in the rumen were slight; sounds in the intestine were loud. There was a small amount of feces passed, of normal consistency, with traces of blood. Respiration was difficult, although no cause for this could be found in the respiratory organs. Pulse, 120; respiration, 40; temperature, 39.6. On the following day no feces were passed, only some mucus. Colic symptoms were no longer observed. The animal groaned and was off feed. Pulse 110, remained at 110 on the third day. The animal groaned no more and appeared somewhat improved; but being still off feed and in good flesh; emergency slaughter was done.

The following is a case similar to the above: A cow in the 35th week of gestation, in fine flesh, had suffered from digestive disturbances for five days. The condition became aggravated. Slight, transitory symptoms of colic appeared.

On examination I found the following: temperature of the body surface not uniform. Pulse 62, respiration 28, rectal tempera-

ture 38.9. Peristaltic movements of the rumen are few and weak; intestinal sounds audible. Occasionally a front foot was lifted, as if to paw the ground. There were slight groans, which were more plain when the animal's back was pinched. Examination of the genitalia disclosed nothing abnormal. Administration of a cathartic resulted in a passage of thin feces without improvement in the general condition. The animal was slaughtered.

Inspection disclosed a slight swelling of the spleen and hardening of the liver: 120 centimeters anterior to the anus there was a strong, gelatinous infiltration of the rectum, its mesentery and of the tissues of the pancreas. The rectal mucosa showed a depression in which there was a dry, decomposed potato, and inflammatory products. BERG.

UNCOMMON TUBERCULOUS LESIONS. Doct. P. Chausse. *Rec. de Medecine.*—TUBERCULOSIS OF CASTRATION.—This is only the fifth observation made by the author and it is probable that many more could be discovered if the attention of inquirers was directed to it. In this case the tuberculous tumor was developed at the expense of the stump of the spermatic cord with extensive generalization. On the left cord the lesions were well marked, the inguinal lymph glands were only a little hypertrophied, the iliacs were more involved, the crurals and popliteals were not apparently tuberculous. On the right cord, the lesions were more important. There was a bilobulated mass, well illustrated in the plates accompanying the article of Doct. Chausse. The lymph glands were relatively little involved. The generalization was much developed considering the age of their existence and the age of the infected animal.

The lungs contained between 4000 and 5000 spherical tubercles, the liver about 3000 uniformly disseminated, the hepatic lymph glands were largely hypertrophied, hard, fibrous and caseo-calcareous, the spleen contained some 30 tubercles, the kidneys were apparently free.

Nothing was found in the other lymph glands nor on the median section of the vertebral bodies. LIAUTARD.

TUBERCULOSIS OF THE VESICULA SEMINALIS, EFFERENT CANALS AND URETHRA IN A STEER.—With the exception of one communication of a Swiss Veterinarian, Hess, and that of a French confrere, Bedel, made later, the author has failed to find the record of any observations relating to said localization of tuberculous lesions.

A steer, in perfect condition, had tuberculosis of the lungs, liver and general lymph gland lesions, but none on the pleura or peritoneum. The right vesicula seminalis formed a mass twice as large as the fist, a tuberculous abscess containing about one liter of pus. Besides this abscess, the two vesiculae were tuberculous, both were large, hard and more or less caseous. The right efferent canal showed an ovoid nodosity, as big as a hazel nut, which contained thick caseous pus and under the microscope exhibited many tubercle bacilli. The left canal was apparently normal but atrophied. In opening the urethra, there was found in the prostate portion, tuberculous lesions not well developed and involving the mucosa and sub-mucosa. There were 15 or 20 gray or caseous granulations.

LIAUTARD.

TUBERCULOSIS OF THE DOG, ESPECIALLY IN ITS RELATION TO TUBERCULOSIS OF MAN. Dr. H. Markus and H. Shornagel. *Folia Microbiologica,* Feb. 1916.—Autopsies on 745 dogs performed between the years 1906 and 1915 at the Institute of Pathology of the Veterinary School of Utrecht resulted in finding 14 cases of tuberculosis, or 1.87% of the total number of dogs examined. Three of the cases were discovered accidentally while the other 11 cases were so extensive that the animals were either dead or had to be sacrificed as incurable.

The frequency of the occurrence of the disease in the various organs was as follows:

Mesenteric lymph glands	9 cases	Omentum	4 cases
Lung	7 "	Spleen	2 "
Bronchial lymph glands	7 "	Parietal peritoneum	2 "
Pleura	5 "	Mesentery	2 "
Liver	4 "	Kidneys	2 "
Mediastinal lymph glands	4 "	Pancreas	1 "

Chronic generalized tuberculosis was found in 5 cases and acute miliary generalized tuberculosis in one case.

A careful study of the organisms found in each case was made and the results obtained from ten of the cases tended to show that in 2 of them the bacilli were of the bovine type, while in the other 8 cases, they belonged to the human type.

From their observations and experiments the authors conclude that in Holland, tuberculosis in the dog is more frequent than was supposed; that manifestly in most cases in dogs the infection is of

human origin and that this being true, the tuberculous dog furnishes a source of infection for man, *par excellence*.

A dog ingesting virulent human sputa in the street may serve to introduce and spread the virus in a home where the family is free from tuberculosis. A rational system of prophylaxis against tuberculosis should include methods of sanitary control of dogs living in the home. L. T. GILTNER.

UNDIAGNOSED ABSCESS. P. G. Bond, M.R.C.V.S. *Veterinary Record.*—A fine cow, nine years old had six calves. After the last she could raise herself only with difficulty and at times looked back at the lumbar region and side. She died three days after parturition, her calf being strong and healthy. The post-mortem revealed an abscess, which had matured and burst in the region of the left kidney. There were heart clots in the ventricles. On inquiry it was found that the cow had received a blow on the loins from a falling tree. There followed a swelling which was overlooked as it did not seem to incommode the cow in her general health. The only trouble that had been noticed was some difficulty in getting up, but this had been the case for several years.

LIAUTARD.

—Dr. J. P. Hutton has removed from East Lansing, Mich., to 350 Nold Ave., Wooster, Ohio.

—Dr. Robert Boyd has been transferred from the Quartermaster's Department, U. S. Army, El Paso, to the 8th U. S. Field Artillery, Fort Bliss, Texas.

—Dr. W. H. Paxson has removed from Marietta, Pa. to Glenolden, Pa.

—Dr. Walter Boyce has been transferred from Kansas City, Kans., where he has been engaged in Virus, Serum, Toxins and Analogous Products work for the Bureau of Animal Industry to Superior, Nebraska.

—Drs. W. T. White and William Shannon, who were with the Massachusetts troops at the border, told of their experiences and the way horses in the service were looked after, at a recent meeting of the Massachusetts Veterinary Medical Association.

ASSOCIATION MEETINGS

AMERICAN VETERINARY MEDICAL ASSOCIATION

Prepare for the next meeting of the A. V. M. A. at Kansas City, Mo., in the week beginning August 19, 1917.

NOTE:—In order to comply with the postal regulations, it will be necessary to remove from the mailing list, those who have not yet paid their 1916 dues. Prompt payment of dues from those who are still delinquent, will insure the receipt of the February number at the usual time; prevent any break in the files and add much to the convenience of the Secretary's and Editor's offices.

REPORT OF THE COMMITTEE ON AGRICULTURAL COLLEGE EDUCATION

F. B. HADLEY, Chairman

W. L. BEEBE A. D. KNOWLES

Your committee on agricultural college education begs leave to report that during the past year it has made an effort to get in touch with the teachers of veterinary science in the fifty or more agricultural colleges in the United States and Canada. The object was to find out what sort of instruction is being offered in veterinary science to students of college grade. With this information as a basis, we have arranged a course of study that will be recommended as a standard curriculum for all agricultural colleges.

The investigation impressed us with the fact that these teachers have peculiar and difficult problems to solve, among the most important of which may be mentioned:

(1) The need of giving instruction in veterinary science that will meet the demands of agricultural students who are preparing themselves to become practical livestock men.

(2) The necessity of limiting their instructional work to strictly veterinary topics, so as to avoid trespassing on the field of their colleagues in the animal husbandry department, many of whom maintain that certain courses which are given by the veterinarians in some colleges properly belong to them.

(3) The difficulty of meeting these demands and at the same time of satisfying those practicing veterinarians who object to having farmers taught anything about veterinary science that may in any way deprive them of a small fee, no matter of how much benefit it may be to the farmer.

In regard to the first problem, it must be apparent that unless the instructor furnishes the kind of material that is demanded and for which he is employed, he will soon be asked to resign to make way for a teacher who will offer work to suit the needs of agricultural students.

Relative to the second problem, it may be said that the veterinary work in agricultural colleges from its very nature must always be minor or secondary to that in animal husbandry. Therefore, due deference must be paid to the ideas of the men in charge of the latter courses.

In regard to the third problem, it is to be expected that the instruction in live stock sanitation and methods of controlling epizootic diseases, which young men in agricultural colleges of today receive, is far more advanced than that received by the veterinary student of even a few years ago. When the practitioner, who has not kept pace with the rapid strides of science, meets one of these graduates in agriculture he is obviously at a disadvantage. This accounts for his objections to the giving of veterinary instruction.

On the other hand, the leading practitioners of veterinary medicine support these teachers in their work. The reason why they do so is because experience has shown them that their services are more appreciated by farmers who have had the advantage of an agricultural college education and learned the fundamental veterinary truths. This is especially true if the farmer, when a student, had pointed out to him how difficult it is to establish a correct diagnosis without which one has no basis for intelligent treatment.

Almost without exception, these teachers have met the committee fully half way and have expressed a desire to conform to any reasonable recommendations that this association may make. Therefore, we should carefully consider their problems before offering suggestions for a standard course of instruction.

The tendency of natural science teachers is first to give the student training in basic subjects. This is followed by the more highly specialized courses. Consequently, in outlining courses of

study in veterinary science, the accepted method has been followed and the fundamental subjects, anatomy and physiology, are placed first in the schedule, while the more advanced courses in diseases, for an understanding of which the former are necessary, are placed last.

This introduction should be sufficient to give an idea of the objects of this report. We will now submit for consideration the curriculum of veterinary subjects that is recommended as a standard for agricultural colleges. It should be understood that none of the courses are supposed to be given in as complete a manner as in a veterinary college, so, unless the agricultural student does additional work, he should not expect full credit for courses comparable in name only, provided he decides to round out his education with a professional training.

Curriculum of Veterinary Subjects Recommended as a Standard for Agricultural Colleges

1. Anatomy of Farm Animals. A study of the structure of the animal body with demonstrations to show the normal appearance, position, and relations of the various organs.
2. Physiology and Hygiene of Farm Animals. A study of the functions and hygiene of the animal body, including the physiology of obstetrics.
3. Common Diseases of Farm Animals. A discussion of the causes, symptoms, methods of prevention, and first aid treatment of the common non-infectious diseases.
4. Common Diseases of Farm Animals. Continuation of Course 3, with special reference to the infectious diseases.

In regard to courses 1 and 2, which cover the study of anatomy and physiology, there is no reason why these may not be taken together, if this appears desirable to the teacher. If the students have a crowded schedule and are pressed for time, experience shows that they can more readily understand the structure and functions of the different organs if these subjects are studied in a combined course. Many teachers have found that agricultural students will not elect courses in dissection of the larger animals. To meet this objection and at the same time to give the student some idea of the normal appearance and relation of the viscera, the instructor demonstrates to the class by the use of wet and dry anatomical specimens and by dissecting pigs or other small ani-

mals before them. It is recommended that as much laboratory work be given in physiology as time and facilities permit.

In courses 3 and 4 the students should be taught the fundamentals relative to the causes, symptoms, prevention, and first aid treatment of the common diseases of farm animals. Discussions and demonstrations of the simpler surgical procedures, such as castration and wound treatment, may well be included. There is no reason why a few lectures on the more commonly used medicines should not be included, if the instructor sees fit. When clinical cases are available they should certainly be used to visualize the instruction given in the class room. If all this work is given in one semester, there is no reason why two courses should be listed in the catalog.

The final decision of the question as to whether all, part, or none of the courses shall be required or elective must be left to each agricultural college faculty, as the matter is entirely within their control. However, it is recommended that the association urge every teacher of veterinary science in agricultural colleges to have courses 1 and 2 adopted as requirements for graduation. The other courses may be made elective as students are always interested in the study of diseases and their treatment and will elect them.

The essential point of this proposition is that of forcing the student to take the subjects in logical sequence. In any event, we believe that even one course in veterinary science is desirable, not only from the standpoint of the agricultural student, but also from that of the veterinary profession in general.

Whenever the general curriculum can be so arranged, it is desirable to require agricultural students to postpone their work in veterinary science until they have taken the usual required work in botany, zoology, chemistry, bacteriology, and animal husbandry. If this is done, the students are much better able to grasp both the theory and practical application of the veterinary instruction. Experience in the class room has proved this statement true in every case.

The committee had originally intended to recommend a course in hygiene of farm animals and one in conformation and soundness, the latter to include horseshoeing. Undoubtedly the information that might be given to the student in courses in these subjects would be very useful. However, many veterinarians and nearly all animal husbandmen think that much of this work properly be-

longs to the field of animal husbandry, or should be given in some of the other courses. Therefore, we have decided to leave them out of the standard curriculum. However, the agricultural student should certainly be given an opportunity to get this information either in one department or the other, depending upon which one the man or men best suited for the work is associated.

We realize that in some colleges instruction is given in clinical work, materia medica, therapeutics, and other veterinary subjects, but feel that while it may be highly desirable to offer such courses in some institutions, it is not wise to recommend them as part of a curriculum that is designed to be a standard. A prerequisite consisting of the four courses recommended as a standard should be made for the above-mentioned courses when they are offered.

We recommend the adoption of this report with the firm conviction that, if the suggestions are followed, it will (1) unify and correlate the work in veterinary science offered by the various agricultural colleges, (2) place it on a more permanent basis, (3) entitle it to a place in the general agricultural curriculum with other sciences, and (4) lead to a better understanding between the teacher and practitioner of veterinary science.

SECRETARY'S OFFICE, A. V. M. A.

A meeting of the Executive Board was held at this office December 5th, 1916. It was convened at the request of the members to decide several very important problems which, in the unsettled state, were thwarting the progress of the administrative officers. There were present Drs. F. Torrance, Jos. Hughes, John R. Mohler, H. E. Bemis, R. A. Archibald representing the 1st, 2nd, 3rd, 4th and 5th districts respectively. Dr. V. A. Moore, member-at-large, President Charles E. Cotton, Editor of the Journal, Dr. P. A. Fish, and the Secretary.

The business transacted is too voluminous to report fully in this issue. A definite system of handling the cash resources of the association was adopted, whereby all money collected for fees, dues, subscriptions, advertisements, etc., whether they fall into the hands of the Secretary or the Editor of the Journal, shall first be deposited in the treasury whence they shall be disbursed only on properly signed and approved drafts. A "petty cash" fund not to exceed $500.00 was allowed the Editor to facilitate his work, but this

must be replenished only from the treasury. The association's cash assets were divided into three funds, namely:—the Association Fund, the Journal Fund and the Salmon Memorial Fund, of each of which the Treasurer is the sole custodian. The Tenth National Bank of Philadelphia was accepted as the official repository. As this arrangement places a heavy burden on the Treasurer it was voted to allow him not to exceed $500.00 for office expenses. A sum not to exceed $500.00 was appropriated to help the Bureau of Animal Industry employees in their effort to secure additional compensation through a legislative action now pending before Congress. This action was taken to clear up a disputed point arising from an ambiguous transcript in the Detroit minutes.

It was decided that the sum of $2.50 shall be set aside from the annual dues of each member for subscription to the Journal and that this sum shall actually be deposited in the Journal fund. Non-members shall pay $3.00 per year as formerly for such subscription. The Secretary's salary was fixed at $1200.00 and the Editor's at $1500.00 per annum, and plans looking to a closer co-operation of these two officers were decided upon.

The votes cast for the nominees for the offices of District Member of the Executive Board were counted November 27th, by a committee composed of Drs. N. S. Mayo, Chairman, A. H. Baker, George B. McKillip, A. C. Worms and J. F. Ryan; and the following candidates were declared nominated:—1st District: George Hilton, Ottawa, Ont; Fred H. S. Lowry, Toronto, Ont.; C. D. McGilvray, Winnipeg, Man.; J. G. Rutherford, Calgary, Alta.; and F. Torrance, Ottawa, Ont. 2nd District: S. Brenton, Detroit, Mich.; O. H. Eliason, Madison, Wis.; W. Horace Hoskins, Philadelphia, Pa.; L. A. Klein, Philadelphia, Pa.; and D. S. White, Columbus, Ohio. 3rd District: C. A. Cary, Auburn, Ala.; M. Jacob, Knoxville, Tenn.; A. D. Melvin, Washington, D. C.; John R. Mohler, Washington, D. C.; and G. A. Roberts, W. Raleigh, N. C. 4th District: J. S. Anderson, Seward, Nebr.; W. F. Crewe, Bismarck, N. D.; J. I. Gibson, Des Moines, Ia.; C. H. Stange, Ames, Ia.; L. Van Es, Fargo, N. D. 5th District: R. A. Archibald, Oakland, Calif.; W. H. Dalrymple, Baton Rouge, La.; George H. Glover, Ft. Collins, Colo.; C. F. Keane, San Francisco, Calif.; and A. T. Kinsley, Kansas City, Mo.

Pursuant to the provision of the new constitution to proceed at once with the election of the Executive Board a return-postal bal-

lot was immediately printed and mailed. The cards were mailed at Chicago, December 6th and 7th and are returnable on or before February 20th, 1917, on which date the same committee will count them and recommend the successful candidates.

Owing to the requirements of the postal laws, the publisher of the Journal of the American Veterinary Medical Association will be compelled to discontinue sending the Journal within a reasonable time after the expiration of the subscription. It is a violation of the postal regulations to send periodicals in the absence of a bona fide payment in advance thereof or some indication that payment is intended to be made. It will save much unnecessary work in the offices of the Secretary and Editor if the dues are paid promptly. This notice is to urge members to remit promptly in order to avoid discontinuance of the Journal.

In order to comply with the postal regulations; that the office of publication shall be fixed by the association or its executive board, Ithaca was declared the official home of the Journal.

The matter of securing rates to Kansas City, the place selected for the next annual meeting, has already been taken up with the following passenger associations: Central, Eastern Canadian, New England, Southeastern, Southwestern, Transcontinental, Trunk Line, and Western. Mr. R. S. Parish, City Passenger Agent of the Chicago, Burlington & Quincy Railroad has kindly consented to act as our personal adviser in this connection. While it may seem premature to discuss this subject now, we find that concessions in rates can only be obtained through favorable action of the associations at their annual meeting which will be held at an early date. Under the guidance of Mr. Parish we have reasons to believe some benefits will accrue to the members through this early action.

L. A. MERILLAT, Secretary.

TWENTIETH ANNUAL MEETING OF THE U. S. LIVESTOCK SANITARY ASSOCIATION

The twentieth annual meeting of the U. S. Livestock Sanitary Association was held at the Hotel LaSalle, Chicago, on December 5, 6, 7, 1916.

The meeting was called to order by President Dyson on the morning of December 5th. Hon. Edward F. Dunn of Illinois was expected to welcome the association, but was unable to keep his ap-

pointment. Dr. Rutherford had been chosen to respond to the Governor in behalf of the association. The Governor's message being received too late to make other plans, the president peremptorily summoned Dr. Rutherford to extend to the association the address of welcome that he might then be allowed the privilege of replying to it.

We read of the fellow who does something in an inimitable manner and in most cases it is only the elastic imagination or conscience of the writer that admits such an expression, but we doubt if this expression were ever applied with more merit than to Sir John G. Rutherford.

He summoned his Scotch humor to aid in his impersonation of the Governor of Illinois and, among other things he stated, was that all cities claim to have some advantages and that with all sincerity, with the possible exception of Glascow, a city in his native country, that to him Chicago stood out as the most undesirable place on earth to live; but he would admit that possibly for those from the arid regions of either the States or the Dominion, to them Chicago had one advantage; it is a place where a man can get a drink.

He then proceeded to respond to the address of welcome by announcing that we "*smell*" Chicago with pleasure; the odor being somewhat mitigated by the knowledge that Chicago is the greatest livestock center in the world and that no man, whether he be veterinarian, feeder, or breeder, could come to Chicago and take an intelligent interest in the animal industry without deriving some benefit. In connection with animal industry he pointed out how greatly transportation facilities have increased and how additional duties and precautions have multiplied for those engaged in sanitary control work, where the slightest carelessness or dereliction might bring about disaster; that no veterinarian should miss an opportunity to impress upon the constituted authorities the necessity of safeguarding the livestock industry and the universal necessity of sanitary control measures.

The next was the report of the Secretary-Treasurer, showing the Association to be in good financial condition and the splendid increase of membership to 307.

The President's address reviewed the Association work from its conception in 1907, the first meeting being held in Virginia with a membership of 23, to the present time. He reminded us

that the livestock interest is the largest single interest of our agricultural industry and how livestock producers should see to it that capable non-partisan men are in charge of sanitary regulations. He laid emphasis on the necessity of practical and economic principles and that these two important factors should not be lost sight of in such regulations and that no regulations should be so stringent as to cause hardship where interests outweigh the risk of unreasoable ones.

He further pointed out, what is evident to any one who is capably informed, that a tuberculin test certificate issued by a veterinarian of questionable character is of no value and should not receive any consideration and that likewise a certificate issued by a capable, reliable veterinarian for a non-reacting animal coming from a diseased herd is of but little value.

He advocated the necessity of some restrictions in the shipment of hogs intra-state from premises where hog cholera exists.

He does not believe it necessary to exact a mallein certificate for horses shipped inter-state except from areas known to be infected.

He also stated that influenza is causing serious losses to our equine industry, yet nothing is being done to control this contagion by enforced sanitary attention of stock cars and public stables.

Dr. Kiernan, as chairman of the Committee on Uniform Livestock Regulations, a report of which was delayed from 1913 on account of the presence of foot-and-mouth disease, in 1914-1915, submitted the delayed report which was accepted by the society.

Following the report, Dr. Merillat read a paper on the mouth trouble that has been so prevalent at many stations during the past two or three months, where great numbers of horses have been gathered preparatory to shipment to foreign countries.

Dr. Merillat prefers the term "gangrenous glossitis" to "infectious stomatitis", basing his nomenclature on the pathology and the fact that the lesions are mostly confined to the tongue, the lips and the nasal lesions not being constant and never independent.

A pleasant and educative discussion took place between Dr. Merillat and Dr. Mohler of Washington as to the pathology, Dr. Mohler believing that the lesions are more vesicular than gangrenous and that it is quite typical of the disease long known as "infectious stomatitis", being prevalent in South Africa since 1884.

Dr. Eichhorn also discussed the subject and the important facts that all seemed to be agreed upon are that it is:—first, highly contagious. 2nd, disseminated through feed, hay, and water boxes. 3rd, etiology not known. It is not a filterable virus as it is not capable of reproducing the disease after passing through a Berkfeld filter. A Gram negative bacillus has been found which produced certain symptoms but were not typical, however. This organism appears to have a bearing on the cause. 4th, transmissible to cattle but not to sheep or hogs. 5th, the virus can be recovered in an inoculated calf and reproduce the disease in the horse.

Symptoms in the horse:—thirsty; temperature 102° to 104°, lasting two to six days; appetite, good; salivation and difficulty in masticating; white patches slightly elevated, mostly seen on ventral surface of tongue.

Symptoms in cattle:—salivation; smacking of lips similar to foot-and-mouth disease; vesicle on tongue and pad similar to foot-and-mouth disease; some difficulty in masticating; temperature around 103°.

Differs from true foot-and-mouth disease in cattle:—1st, it is not transmissible to hogs and sheep. 2nd, it is readily transmissible to horses, while foot-and-mouth disease transmission is exceptional; natural infection of the horse did not occur in a single instance in the last three outbreaks in this country. 3rd, in foot-and-mouth disease, we have mouth lesions, foot lesions and udder lesions. In this disease the lesions are confined to the mouth. 4th, foot-and-mouth disease is systemic with high temperature; this disease is rather local with a lower temperature. 5th, this disease spreads slowly whereas foot-and-mouth spreads quickly.

Dr. Kinsley also took part in this discussion speaking of the recent outbreak among cattle in the Kansas City stockyards which gave so much concern to western stockmen. He made an appeal for the government to evolve some rapid method of diagnosis, possibly a biologic test, with the hope of relieving stockowners of the suspense, worry and expense, where, perhaps, cattle had already reached a market and had to be held for the slower method of diagnosis.

Dr. Mohler stated that if the organism was found, an antigen should be simple. Dr. Eichhorn, in giving details of some experiments he conducted, stated that he had been able to transmit the disease to one horse in three days and another in five days, by scari-

fication of the dorsal surface of the tongue. First vesicles and then erosions appeared. Material taken from these lesions transmitted the disease to a calf by scarifying the dental pad.

The lesions so resemble foot-and-mouth disease in the calf that it is almost impossible to tell the difference, the ruptured vesicle leaving practically the same surface and the healing of the lesions progressing rapidly as in foot-and-mouth disease; the only variation being that a few cases showed a pseudo-gelatinous membrane.

Three calves were subjected to intravenous inoculation and five to scarification of the dental pad. Lesions appeared in 48 hours on the scarified pad; but those receiving virus intravenously gave negative results.

Inter-digital application on hogs gave negative results. Horses apparently do not take the disease readily with scarification. Application of the virus on slightly scarified surfaces caused cases to develop in the horse on the third day. Treatment consists in allowing the animals to wash their mouths in drinking troughs with a solution of permanganate. If the lesions are very severe it is well to dress them daily with a mild solution of picric or boracic acid.

After the close of this interesting subject, Dr. Dorset gave a review of the research work on hog cholera conducted by the Bureau of Animal Industry during the past year.

He first took up the application of heat on hog cholera serum and virus to determine if possible a method to destroy the virus of foot-and-mouth disease without injuring the potency of either the serum or virus. Fifty-six degrees C. did not destroy potency but did interfere with the physical appearance and thus with the marketing; so it was found advisable not to heat above 50°C. It is generally agreed that the heating of the foot-and-mouth disease virus to 50°C. for 12 hours would be sufficient, but this was not practical. Another method was then tried of separating and washing the red blood cells since the cells contain no antibodies and are of no value, but centrifuging was only about 50% satisfactory.

Dr. Henley devised another method of separating serum and cells. He found that the common white navy bean would cause agglutination without giving any irritating properties to the serum and by adding 1% sodium chloride before centrifuging, 70% of the total volume of the original defibrinated blood could be recovered. This heated for 30 minutes to 60°C. is apparently satisfactory. Time enough has not elapsed since this method has been in use to determine the keeping qualities of serum so treated.

One lot has been kept two and a half months and another one eight months and up to the present this process seems to meet all requirements.

Another experiment was to determine the infectiousness of blood and excreta of the cholera infected hog, at different periods. The information obtained from this experiment indicates that the blood and urine are infectious the first day after the animal has been inoculated with virus, the second day the feces;; and the third day the discharges from the eyes and nose; all before the hog shows symptoms of the disease.

To determine the effects of natural exposure three infected hogs and two non-infected ones were put in a pen together for 48 hours. The latter were then removed to disinfected pens, then two more susceptible ones put in 48 hours more and so on up to the 10th day. All hogs developed cholera except the two put in the first two days. These were not immune to the disease as was later proved by inoculation. Another experiment was to determine how long recovered pigs are carriers. Two recovered pigs, the 23rd day were scrubbed, disinfected and put with two non-immunes for 21 days. The latter remained well. Another experiment was to determine the survival of virus in buried carcasses. Four carcasses buried in warm weather at the depth of two feet were exhumed on the 7th, 14th and 21st days and pieces fed in bran mash to susceptible hogs. None developed cholera from carcasses that had been buried 14 days or over, putrefaction apparently destroyed the virus.

The likelihood of attendants carrying virus to healthy pigs was then taken up. Healthy pigs were placed 100 yards from cholera infected ones. Men took the temperatures of the sick pigs disinfected their hands and thermometers, then went into the pens where the well pigs were, and took their temperatures without changing their clothing or giving any attention to their footwear. The test pigs remained perfectly well for thirty days; they were then moved 50 yards nearer under the same practice but continued well; they were then directly exposed to and contracted cholera. Two control pigs nearby did, however, develop cholera on the 17th day.

The question which is often asked and is an important one, is; how soon is it safe to restock a farm after an outbreak of cholera has been suppressed? An experiment to determine this was carried on in August, September and October 1916. Covered pens

of five different kinds, wood, concrete, etc., were used; very little sunlight was admitted in any of them; they ranged in size from 5 feet square to 25 feet square. In all the pens pigs were present in different stages of the disease, dying in some of them. Without cleaning or disinfecting, susceptible pigs were placed in these after sick or dead hogs had been removed, the time varying from 7 minutes to 24 hours. In no case did a pig develop cholera in a pen where the dead or sick had been removed for 24 hours.

In closing Dr. Dorset wished it to be understood that none of these experiments have been carried far enough to be considered as definite and stated that summer conditions should be taken into account in aiding putrefaction as it does, more rapidly than in cold weather. Dr. Dorset's paper was discussed by several interested in this great problem. Dr. Connaway of Missouri recited some experiments that had been carried on in his state and believes hyperimmunes should be tested for tuberculosis. Dr. Ranck of Mississippi told of interesting experiments he had conducted to determine if possible the infectivity of air alone. His results would indicate that air does not play an important part as a carrier of hog cholera virus.

Dr. Gibson of Iowa is always loaded on the hog question and as is characteristic of him, he tackled the proposition from a practical viewpoint; even considering the possibility of saving the salvage of cholera carcasses. There was a sound of amusement over this, somewhere in the room, when a twinkle appeared in the Doctor's eye and he quickly retorted that the dead hogs of his state were worth more than the live ones of some other states.

He stated that the iniquitous practice of hog raisers inviting their neighbors to help them draw their hogs hurriedly to market, when they suspected an outbreak of hog cholera, was a method of infecting several carriers which in turn infected other premises.

Dr. Gibson believes in facing conditions as they are and devising methods to suit the occasion so that the public will co-operate rather than evade, and favors the disinfection of every stock car at its point of destination and that it would be more practical to make regulations allowing exposed hogs to go to market under restrictions rather than prohibit it. He believes every shipment of live hogs should be immunized and that every breeder marketing breeding animals should be forced to immunize under proper regulations.

Hog raisers should have a loading shute at their hog lot to prevent the necessity of neighboring teams entering the hog lot. Susceptible hogs should be loaded direct from wagons in clean, disinfected cars and unloaded in clean, disinfected shutes.

Dr. Luckey of Missouri believes that hogs for shipment receiving serum alone, should be dipped and held for six hours after, before being shipped. He explained the method of handling hog cholera in his state, reaching out for aid from various associations on all sides, even enlisting the aid of school boards to do detective work, and reporting outbreaks. Competent veterinary practitioners are appointed irrespective of politics, and are paid *per diem* when employed.

Dr. Koen of the Bureau of Animal Industry then read a paper on hog cholera, reviewing the entire subject, mentioning as important factors:—1st, diagnosis. 2nd, quarantine. 3rd, serum alone. 4th, serum and virus. 5th, proper administration by qualified veterinarians.

Dr. Nelson of Indiana said that there was a law in his state allowing the salvage of hog cholera carcasses which was very objectionable, as it courts vicious practices. He told of the methods of control practised in his state which are quite similar to those in general use.

Dr. Cooley from Ohio, explained that in his state they allowed only veterinarians to use serum, and that such veterinarians are approved to administer it only after they have taken special instructions at a serum plant, and additional instructions from an experienced field veterinarian. This would seem to us like a sensible precaution.

Dr. Musselman from Kentucky said that statistics in his state in 1914 indicated that the annual loss from hog cholera had been averaging around $200,000.00 and it is now estimated that this has been reduced one-half. The Kentucky requirements are that a serum treated hog entering the state must be so treated not more than five days before entrance and that in the case of virus and serum not less than 21 days after treatment.

Dr. Cahill of Massachusetts explained how conditions differed in reference to swine raising in the New England States as compared with the Middle and Western States, ninety per cent being swill fed and kept under bad sanitary conditions. No serum or virus is allowed to be used in the State of Massachusetts until it

has been tested by the Massachusetts Department of Animal Industry and then must be administered by the Department agent. Splendid advancement has been made in Massachusetts in the control of hog cholera.

On the morning of the second day Dr. Eichhorn presented a paper dealing mainly with immunization against abortion with live cultures. In his summary he stated that present investigations point to the possibility of success along these lines. Like all good sanitarians he believes that prevention is the important phase of this trouble and should receive the greatest attention.

The Federal Bureau of Animal Industry has undertaken a campaign to suppress abortion and hopes to secure the assistance of many agencies, such as state and local organizations, and recommends that the U. S. Live Stock Sanitary Association appoint a committee of the most capable men available, to get together such facts as are worthy of consideration at the present time, and to formulate and develop plans looking to the control of this malady.

Dr. Williams of New York followed Dr. Eichhorn with a paper mentioning the noted changes that have come about among scientists and breeders during the past few years in recognizing the disaster of abortion and its allied ailments. He believes as others of us do, that calf scours is closely associated with abortion, and that the new born calf usually gets the infection from infected milk or the udder that has been soiled with vaginal discharges. He outlined methods in caring for a herd where abortion is present, paying special attention to the care and treatment of the pregnant cow. On this subject the Doctor was on his good behavior, and we recommend a careful reading of this by those interested in the subject. He still adheres to the belief that abortion has no tendency toward immunity.

Dr. Lamb, of Colorado, gave a paper on the subject, "Abortion and the Range Cattle Industry." He does not believe that contagious abortion is present among range cattle, and that practically all abortion among range cattle is due either to accident or dietetic causes, and if the contagion did exist simpler methods of control would need to be found in order to be of practical application.

Dr. Marshall of Pennsylvania presented a paper on "Possibilities and Limitations in Control of Abortion." He told of conditions as they exist in Pennsylvania, basing his deductions prin-

cipally on some large purebred herds he has had to do with. He believes that isolation and sanitation are the best agents of control known as yet. He does not believe granular vaginitis plays much part in sterility, having seen herds so affected with practically no sterility. Neither does he believe that calves contract contagious abortion by drinking the milk of affected cows. He advocates good sanitation, proper attention to the uterus following parturition and that if the uterus is cleansed and made healthy, animals can be bred very early.

Drugs and crude operative interference such as dilating the os is useless and sometimes harmful. Thinks it is wrong to sell aborting animals as many will never abort again. In summing up he submitted the following recommendations:—1st, frequent stable disinfection. 2nd, washing hind quarters, tail, etc. with disinfectants daily. 3rd, watch non-pregnant animals; if there is any discharge, douche uterus three times weekly. 4th, discharges and membranes should be properly destroyed. 5th, attention to the bull in the way of douching and keeping clean.

The next on the program was "Practically Significant Facts about Abortion disease," by E. C. Schroeder and W. E. Cotton of the Bureau of Animal Industry. The paper was presented by Dr. Schroeder. Some of the important conclusions of these authors were that cows may be carriers that have aborted, and then cease to abort. Cows that never abort may be carriers. The udder is frequently infected. Period of udder infection varies greatly, several cases known from one to four years. Period in which uterus remains infected after abortion, about three weeks. Abortus bacilli do not ordinarily live in a non-pregnant uterus. Abortus organisms do not live in the animal body in parts other than the udder and pregnant uterus of mature animals. Not so with the fetus, as the intestinal tract of the newborn calf of infected mother is frequently infected. This seems to disappear in about three or four months. Believes there is danger of milkers' hands infecting the udder through the teats and so spreading the disease. Questions the value of uterine treatment with germicides, even thinks it may possibly be harmful. Does not believe the bull is an important factor in the spread of this disease.

(On this particular question we would like to inject a bit of experience that we did not have the courage to bring up at the meeting after such an exhaustive discussion of the subject, and our

friend Dr. Moore, with the formidable task still ahead of him under the caption of "Summary".

A client with 23 cows and a rather choice bull that had been getting some particularly fine calves, some two years ago was prevailed upon to loan or hire his bull for a few weeks to a neighbor, that he might breed some of his animals. The bull was loaned or hired and returned in about five weeks and the owner then bred more of his own animals and continued doing so during the summer and fall months. Some three or four months after the bull had been returned abortion appeared in his herd and 13 out of the 17 animals bred that year aborted. They were all home bred animals, no strange female had been added to the herd. Where was the source of contagion?)

Dr. Moore of New York, in summing up stated that we are yet in the research stage. There is really nothing definite to state. He thinks that various opinions are beneficial even though conflicting, we are making progress. For instance, we seem to be agreed on the definite cause, also the complex disasters that go with the disease. As it appears to him, he thinks that abortion can be prevented or at least lessened by applying our present knowledge in the way of attention to the uterus, ovaries, etc. He believes the two important factors at present are: How widespread is this organism and how is it disseminated? He has found organisms in the uteri of cows six weeks or longer after abortion.

The next on the programme was a paper by Dr. Wills of New York entitled "How should a tuberculin test be applied to insure accuracy in results?"

He reviewed the different tests as applied to detect tuberculosis and in the subcutaneous test recommends beginning the taking of post temperatures at the eighth hour and carrying them through to the twentieth hour.

Dr. Kinsley spoke briefly on "The Nurse Cow and Her Relation to Bovine Tuberculosis." Believes that this phase of infection does not receive sufficient attention, particularly the present custom of stockmen using nurse cows that have not been properly examined to determine whether or not they are free from tuberculosis. This ended the morning session of the second day.

The program of the afternoon session was arranged largely to discuss what might be termed "administrative questions,"

The first speaker was Mr. Groman of Illinois. He advocates legally constituted Sanitary Boards of three members who are actively engaged in farming or stockraising in their own states so as to be familiar with local conditions; having headquarters at the State Capitol; expenses and reasonable compensation to be allowed. He was followed by Dr. Cotton of Minnesota, who mentioned the principles he believed should be taken into account. The sanitary Board should have full power to act promptly when a sudden outbreak of a dangerous disease appeared. All biologics used in the state should be under state control. There should be a State Laboratory with the power to make necessary investigations. The board should consist of stockmen and veterinarians. Field men should be qualified, experienced practitioners and should be on full pay. Meat and milk inspection should receive more attention.

This important subject was discussed by Drs. Dunphy, Ramsey and DeVine.

Mr. Hastings of Texas spoke on the "Desirability of Exempting Range Bred and Branded Cows and Heifers from State Regulations Governing Importation of Cattle for Breeding Purposes." He pointed out the impracticability of testing range cattle shipped to the middle or northern states when in transit, and pleaded for the assistance and co-operation of such states in making an agreement that would be equitable to the cattle shipper and at the same time protective to the state receiving the cattle.

Believes there is practically no tuberculosis among range cattle and in case tuberculosis is discovered in the shipment of cattle coming from the ranges, they could be traced to point of origin by the owner's brand.

Dr. Bahnsen of Georgia also spoke on this subject, supporting Mr. Hastings' contentions.

Dr. Ramsey explained the law required, in the case of range bred cattle, that the owner register his brand.

From the discussion that followed it seemed that a plan could be sensibly arranged.

A proper method of applying the subcutaneous tuberculin test was again brought up and settled by adopting uniform regulations that had been submitted by the committee which included the Bureau regulations in making a tuberculin test, which read from the eighth to the twentieth hours.

Dr. Ranck of Mississippi, in presenting the subject "Sugges-

tions for Regulations Governing Inter-State Movement of Live Stock," believes that it is unreasonable and unjust to exact a veterinary certificate from a poor man with a few head of animals from an isolated area where infection is not known to exist.

The next subject on the programme was "State Accredited Herds" by Dr. Eliason of Wisconsin. He explained that Wisconsin already has several such herds and the policies and methods in vogue in that state. Those who spoke in favor of the accredited herds were Mr. Bent of Illinois, Mr. Glover of Wisconsin and Drs. Ingram, Marshall and DeVine. The matter was referred to the Committee on Resolutions.

During the forenoon of the third day the representatives of the different stock papers had the floor.

Mr. Russell of the 20th Century Farmer, presented a splendid paper on "How can State Livestock Sanitary Officials Best Serve and Co-operate in Promoting the Interests of Livestock Producers?" His discourse gave evidence of an intimate knowledge of the details that enter into efficient sanitary control work. He advocates a Sanitary Board rather than a State Veterinarian as he believes that different interests should have representation. The board should consist of five members; two veterinarians and three laymen. The latter should represent different kinds of stock. The executive veterinarian to be selected with greatest care as the most important of all members. He should be selected for ability alone, politics not to be considered. Salary should be adequate to secure a good man. Should not be engaged for any definite period but retained as long as he gives faithful, capable service. Believes quarantine lines in any serious outbreak of disease should be placed by the Bureau of Animal Industry as it so often happens the state line is not satisfactory.

Mr. Gregory of the Prairie Farmer, emphasized the necessity of more co-operation of all taking an active part in the livestock industry.

Mr. Snyder of the Farmer's Review, commented on the wisdom of recognizing the agricultural press as an important factor and the only way sanitarians can get the true version of their work before the public.

The closing topic for the morning session was "Livestock Sanitation, Past, Present and Future," by Dr. John G. Rutherford, of Canada. The Doctor dispensed a little fun, some science and a good

bit of common sense. He said in part that sanitation might be traced from the days of Moses but there was no beginning of real veterinary sanitation until the 18th century. Knowledge then was contradictory making very little progress until the last half of the 19th century. The principal agents used in the early times as disinfectants and deodorants were asafetida, anise, and the far famed Billy goat. Following this, corrosive sublimate was introduced and still later carbolic acid and its derivatives.

He said that even as late as the time he graduated, in 1879, spontaneous origin of infectious diseases was still taught. Hunting of England published a monograph in 1887 on glanders and quoting from George Fleming gave a lengthy explanation of how this disease could arise spontaneously. Williams of Europe, as late as 1890, put forth what he believed a very positive argument that glanders originated spontaneously. The speaker compared the great strides since made in the introduction of tuberculin and mallein, opening the way for simpler and surer methods of diagnosis. Fleming's Veterinary Sanitary Science and Police was the first real text book written comprehensively on this subject. This book was published about thirty years ago. In emphasizing how slowly, sometimes, science advances, he reminded us that even at this time there are some who doubt the existence or infectiousness of rabies and, in contrast to this, the great strides that have been made in tick eradication since it has been found that southern cattle fever was due to this intermediate agent.

An important problem along this line for the future is the animal that is a disease carrier while in all appearances being quite well. Future regulations require more uniformity among authorities and to show as how ridiculous and even disastrous quarantine methods may be even with our present knowledge, he cited how England has long since exacted rigid quarantine methods on all dogs coming into the country, but neglected the foxes imported from France for hunting purposes, until a master of hounds died with rabies contracted from a fox bite.

He advocates the collaboration of the producer, consumer, Government, State and Municipal authorities. All should be consulted before an order or regulation affecting all be promulgated; pointing out how often unpleasant circumstances may arise or develop without such consultation. Even the "crank" should be consulted as he has a value if handled properly.

All great nations, such as ours, should be always ready to handle any emergency or crisis. Cautioned against today's tendency of believing that we know all that should be known concerning many maladies. He spoke at some length of the great value of the practising veterinarian in sanitary control work and he left no doubt in our minds but that in his opinion, after all, the capable, conscientious practitioner is the backbone in controlling contagious disease.

Thursday afternoon was devoted mostly to committee reports and the following resolutions were submitted and adopted:

1. WHEREAS, It is important that outbreaks of contagious and infectious diseases be promptly quarantined, therefore, be it

RESOLVED, That the Federal law and such State laws as provide to the contrary be amended to permit the State Veterinarian, a Livestock Sanitary Board, a Livestock Commissioner and the Federal Bureau of Animal Industry to quarantine any outbreak of contagious or infectious disease as soon as the fact or a well grounded suspicion is established.

2. BE IT RESOLVED, That this Association recommend to the various State Fair Associations the adoption by them of regulations requiring that all cattle exhibits shall be accompanied by a certificate issued by the authorities of the State from which exhibits originate—that such animals are from a State Accredited Tuberculosis Free Herd or a certificate from the authorities above mentioned that animals have been tuberculin tested within a period of six months and are free from tuberculosis as evidenced by the test.

3. WHEREAS, The expense of inspection of hogs and sheep shipped interstate by express is burdensome upon the breeders and tends to restrict the movement of such animals, it is recommended that State regulations be amended to permit swine and sheep, when expressed in interstate shipment to go forward when shipment is accompanied by an affidavit of the breeder that such animals are free from all contagious and infectious diseases, and that they have not been exposed to any contagious or infectious disease for a period of three months prior to shipment.

4. RESOLVED, That the United States Live Stock Sanitary Association place on record its deep conviction of the importance of cleaning and disinfecting stock cars and stock yards in the control of contagious diseases of animals, and desire to call the attention of the Secretary of the U. S. Department of Agriculture and State Live Stock Sanitary authorities to the urgent necessity for proper legislation or regulations requiring transportation companies to clean and disinfect all cars used in live stock transportation immediately after unloading, and also requiring that all public stock yards be maintained in a clean and sanitary condition.

5. WHEREAS, It is highly desirable that tuberculosis be eradicated from all farm animals, and that to accomplish this systematic and efficient effort be made, and

WHEREAS, The plans as laid down for the establishment of accredited

herds of cattle in several States that have accredited herds provide for intelligent application of the tuberculin test and for the proper handling of such herds thereafter,

THEREFORE BE IT RESOLVED, That the members of the United States Live Stock Sanitary Association in our Twentieth Annual Convention pledge themselves to render all the assistance possible to establish accredited herds in all States.

6. WHEREAS, It has been shown by investigations made by a representative of the Bureau of Animal Industry throughout the greater part of the United States, that the losses of horses from shipping fever or influenza are becoming so alarming as to be a menace to the horse and mule industry of the country, not only are animals in transit affected, but the disease is carried to other animals in sale and livery stables and even to those used for agricultural and other purposes.

WHEREAS, It is believed that the ravages of this disease can be greatly reduced by proper sanitary measures, provided the same are applied to all shipments of horses whether in *interstate* or *intrastate* transit.

THEREFORE, Be it resolved that this Association, urgently requests that the Federal and State authorities promptly adopt and enforce such measures as will tend to control the spread of shipping fever or influenza.

And be it further resolved that this Association recommend an appropriation of $100,000, by the Federal Congress for the control of this equine plague and that copies of this resolution be forwarded to the Secretary of Agriculture and the Chairman of the Committee on Agriculture and Forestry of the Senate and the Chairman of the Committee on Agriculture of the House of Representatives, Washington, D. C.

7. WHEREAS, There is some contention between a few of the veterinarians and the county agents and

WHEREAS, This condition is deplorable and uncalled for, as they should work harmoniously together for the advancement of our live stock interests, therefore be it

RESOLVED, That we as members of the United States Live Stock Sanitary Association urge a close co-operation between the County Agent and the veterinarian, and be it further

RESOLVED, That we do all we can to eliminate contention between these two factions.

The election of officers for the coming year resulted in the following being chosen:

For President, Dr. J. G. Wills of New York. For Vice-Presidents:—Dr. Archibald, Dr. Eichhorn, Dr. Graham, Dr. Ingram, Dr. Torrance. For Secretary-Treasurer, Dr. Ward of Minnesota, and so closed one of the best, if not the best, meetings the association ever held.

J. F. DeVine.

BRITISH COLUMBIA VETERINARY ASSOCIATION

A Practitioner's Meeting of the B. C. Veterinary Association was held in the Hotel Vancouver on Wednesday, December 6th. Dr. Howell, Vice-President, acted as Chairman in the absence of Dr. Jervis of the Social Committee who was sick in the hospital with appendicitis. Dr. Howell made an address of welcome and then called upon Dr. Strong who is connected with the Health Department of the City of Vancouver as Meat Inspector. He spoke of his duties in this connection and though only being appointed a short time, showed the improvements that had been carried out. Discussion followed and it was the opinion of the meeting that the only solution of the pure meat question was the Municipal Abattoir. The Chairman then called upon Dr. Ransom who spoke on "The Ethics of the Profession"; discussion followed. The Chairman then called upon Dr. Hadwen, who gave a very interesting paper on "Staggers in Horses" caused by bracken, and described experiments conducted by Drs. Hadwen and Bruce at the Veterinary Research Laboratory at Agassiz, B. C. Discussion followed. Dr. Sleeth then gave a paper on "Abdominal Operations on the dog as compared with the horse". This paper went very minutely into the subject and will be concluded at the next meeting to be held in January. Dr. L. D. Swenerton then related some of his duties as an Army Veterinarian in the British Army in England and France, having lately returned from the front. This brought a very successful meeting to a close, but more will be held throughout the winter, some of which the public will be invited to attend.

K. CHESTER, Sec.-Treas.

WESTERN NEW YORK VETERINARY MEDICAL ASSOCIATION

The Western New York Veterinary Medical Association held its 3rd semi-annual meeting Friday, December 15th, at the rooms of the Erie Co. S.P.C.A. building, 121 W. Tupper St., Buffalo, N. Y., with 20 members present. The clinic started at 2:30 P. M., and consisted of eight cases: 5 horses and 3 dogs.

Case I was a Chestnut Gelding with ringbone on both fore feet, involving the posterior tendons of the left to such an extent as to cause considerable contractions of the tendons. Treatment: rest and blistering and taken off city pavements.

Case II, Grey Gelding with a chronic levator humeri abscess. Had never been operated upon, but had been treated with antiphlogistic measures and reduced to nearly normal with the exception of a small bunch at the extreme anterior edge of the muscle just over the joint, the bruising of which would cause the recurrence of the enlargement at intervals. Treatment advised, was to reduce the swelling, to circumscribe the enlargement as much as possible by opening up and evacuating the pus, which evidently was encysted.

Case III, Grey Gelding aged with generalized melanosis—especially around prepuce, tail and anus. Treatment none, inoperable, horse to be destroyed, the general opinion was that it was malignant.

Case IV, Brown Gelding. Hair falling out in large spots all over body, sides of neck nearly entirely denuded. Diagnosis: Alopecia Symptomatica due to faulty digestion. Treatment: Soft laxative food and intestinal antiseptics.

Case V, Brown standard bred stallion. Lame in both hind legs after violent exercise and only then. Diagnosis: thrombosis of iliacs. Upon rectal examination found the post aorta enlarged and hard just anterior to the branching of the iliacs. Treatment: regular exercise.

Case VI, Dog. Bladder trouble. Diagnosis, calculi. Treatment: operation revealed a tumor condition inside of bladder, presumably malignant. Will be verified by microscopical examination.

Case VII, Dog. Injury to back by automobile 3 months previous. Diagnosis: broken back with decided crepitus. During first two months the dog was unable to walk but walks now with partial control of hind parts. Treatment: questionable. Results also questionable.

Case VIII, Dog. Old perineal hernia. Treatment: keep bowels open; operation unsuccessful in old dogs.

Case IX consisted of the Heart and Lungs of a horse that died with contagious pleuro-pneumonia, a disease quite prevalent at the East Buffalo Stock Yards at the present time.

After the clinics the regular business session was held. Three new members were elected. Dinner at 6:30 at the Park Hof Hotel in which all the members participated, after which they returned to the assembly rooms for the remainder of the business and papers.

A committee was appointed to take up the matter of illegal practitioners, collect evidence and prosecute if necessary.

A resolution was also drafted and adopted in regard to the increasing prevalence of contagious pleuro-pneumonia at the East Buffalo Stock Yards and a copy forwarded to Chief A. D. Melvin, of the Bureau of Animal Industry, Washington, D. C., to see if measures could be brought about to eradicate this highly fatal disease.

The papers of the evening were given by Dr. J. L. Wilder, "Physical Examination of Dairy Cows", also a paper on "Nuclein, its uses in Veterinary Practice," by Dr. W. D. Bennett. Both papers aroused considerable discussion in which all the members participated.

The members voted the sum of $25 to be given by the society toward the Salmon Memorial Fund. -Meeting then adjourned to the 4th week in June 1917.

F. F. FEHR, Secretary.

THE OHIO STATE VETERINARY MEDICAL ASSOCIATION

The Ohio State Veterinary Medical Association will hold its thirty-fourth annual meeting in the Veterinary Clinic Building on the Campus of the Ohio State University, Columbus, Ohio, on January 11 and 12, 1917. The usual large attendance of over three hundred veterinarians is expected.

A good program is assured. Dr. D. H. Udall, Professor of Veterinary Medicine in the N. Y. State Veterinary College, Cornell University, will speak at the afternoon session, January 11 on "Some Clinical Observations on Tuberculosis of Dairy Cows" and give a demonstration relative to the same at the morning session, January 12. Another excellent and interesting paper will be "Observations and Results in the Field with Infectious Abortion", by Drs. R. I. Bernath and A. J. Kline, Wauseon, Ohio.

The sessions will be as follows: January 11, 1:00 to 6 P. M., the regular business meeting followed by papers. 6:30 P. M., The Dinner Session, The Ohio Union Commons. January 12, 9:00 A. M., Papers and Demonstrations.

Dr. O. V. Brumley, of the Ohio State University is Chairman of the Local Committee on arrangements. Dr. Reuben Hilty, Toledo, President, will preside at the meeting.

A copy of the program will be mailed to each member January 1st. Non-members desiring copies may secure same by writing to F. A. Lambert, care O.S.U., Columbus, Ohio.

THE CENTRAL NEW YORK VETERINARY MEDICAL ASSOCIATION

The seventh semi-annual meeting of the Central New York Veterinary Medical Association was held at Syracuse, N. Y., November 28th, 1916.

The morning session, opening at 9:00 o'clock, consisted of a clinic held at the infirmary of Dr. H. A. Turner, 938 South Salina Street, at which the following cases were presented:

CASE 1. Bay stallion; castrated; standing operation; surgeon—Dr. H. A. Turner.

CASE 2. Sorrel gelding; sidebones and ringbone; neurectomy, high operation; surgeons—Drs. E. E. Dooling and H. A. Turner.

CASE 3. Bay mare; ringbone; neurectomy, high operation; surgeons—Drs. Turner and Dooling.

CASE 4. Gray gelding; six years old; fistula of withers; patient chloroformed and major operation performed; surgeons—Dr. Frank Morrow, assisted by Drs. Clark and Currie.

CASE 5. Nailed foot; surgeons—Drs. Turner and J. A. Pendergast.

CASE 6. Bay mare; cystic ovaries; spayed by Dr. Danforth, assisted by Dr. Currie.

Following the clinic a lunch was served at the infirmary.

The afternoon session was called to order at 2:30 o'clock at the St. Cloud Hotel by the President, Dr. Frank Morrow. Routine business was transacted. Roll-call found the following members present: Drs. W. G. Hollingworth, H. A. Turner, F. E. York, J. M. Currie, J. A. Pendergast, L. G. Moore, E. E. Dooling, Frank Morrow, A. J. Tuxill, W. B. Switzer, W. L. Clark, R. C. Hurlbut, J. V. Townsend, J. C. Stevens, J. K. Bosshart, D. O'Laughlin, R. C. Hartman, and A. L. Danforth. There were also present Dr. O. P. Jones of Manlius, an applicant for membership, and Dr. J. H. Taylor of Henrietta and Dr. Joseph Turner of Lyons, as guests.

Dr. J. M. Currie, for the Board of Censors, reported that Dr. D. C. Papworth of Rome, N. Y., a member of the association, had made application to the secretary for the assistance of the associa-

tion in the defense of an action for mal practice pending against him. This application was made under an amendment to the by-laws passed some years ago, providing for the accumulation of a fund for the purpose of affording such aid to members who would transfer to the association such defense, at the same time relinquishing their right to the costs of the action if successful in the defense. It being determined, after consultation with an attorney, that the case pending against Dr. Papworth came within the provision of the by-law in question and Dr. Papworth being ready to grant to the association the control of the defense and any advantages arising therefrom, the Board of Censors authorized the employment of counsel to represent the defense. Dr. Currie reported that an answer had been served in the action and that the case had been put over until March, 1917.

The application of Dr. O. P. Jones for membership was presented, favorably reported by the Board of Censors and Dr. Jones was elected to membership.

The secretary reported an action pending against N. J. Muldoon of Oswego for alleged illegal practice, the same having been brought by the People under the recent amendment to the Public Health Law, giving to the Attorney-General the right to prosecute such actions. At the date of the meeting the case had been put over to a later term of Court upon an agreement of counsel that said Muldoon would discontinue the practice of the profession until final disposition of the case should be made.

The association adopted a resolution providing for the use of cards releasing it from liability for causing the death or injury to any patient treated or operated upon at its clinics. The advisability of using such precautionary measure in the treatment of patients at their infirmaries by the members individually was also discussed.

Among the papers presented were the following: "Rupture of the Pre-pubian Tendon" by Dr. W. M. Sullivan; "Foot wounds" by Dr. A. L. Danforth. Dr. W. B. Switzer gave an interesting instance of a nailed foot and the treatment used. Very full discussion was had on all these matters.

Dr. Hollingworth made a strong appeal for support, both financial and otherwise, for the N. Y. State Veterinary Society. He also called attention to the proposition pending before the American Veterinary Medical Association to provide a fund for the re-

lief of members of the profession disabled through accident or other causes. He asked the members to express their views upon this proposition through the Veterinary Journal.

No further business appearing, the meeting was regularly adjourned.

W. B. SWITZER, Secretary.

SOUTHERN STATES VETERINARY MEDICAL ASSOCIATION

The following program was prepared for the meeting held at Atlanta, Ga., December 27 and 28:

Call to Order by Temporary Chairman ..... Tait Butler, Memphis
Address of Welcome ..... Mayor Woodward, Atlanta
Response to Address of Welcome ..... W. H. Dalrymple, Baton Rouge
Some New Therapeutic Suggestions ..... N. S. Mayo, Chicago
Healing of Fractures in Fowls ..... B. F. Kaupp, Raleigh
Operations for Abdominal Hernia ..... C. A. Cary, Alabama
Open Joints in Equines ..... John W. Salter, Georgia
The Veterinary Profession of the South—Past and Future
F. W. Porter, Florida
"Contagious Abortion" Infections in Animals and Man .. G. A. Roberts, Raleigh
Vesicular Stomatitis ..... M. Jacob, Nashville
Hemorrhagic Septicemia of Cattle ..... F. P. Caughman, Columbia
Influenza and its Complications ..... R. L. Humphrey, Southern Railway
Clinical and Post Mortem Observations on Influenza and its Sequelae
M. J. Ragland, North Carolina
The Veterinarian and Some of His Problems ..... D. O. Piatt, Birmingham
Evening dinner, with formation of Permanent Organization, adoption of Constitution and By-Laws and Election of Officers.
Interstate Health Certificates ..... P. F. Bahnsen, Atlanta
Methods of State Control of Live-Stock Diseases ..... E. M. Ranck, Mississippi
Acorn Poisoning of Cattle ..... T. N. Spencer, North Carolina
Hog Cholera Vaccination from the Practitioner's View Point
E. D. King, Mobile
Legal Phases of Veterinary Practice ..... D. M. Campbell, Chicago
Veterinary Medicine—Its Social and Economic Relations .. S. O'Toole, Atlanta
Non-Surgical Clinics. Hospitals of Drs. Burkland and Wright.

ANNUAL CONFERENCE FOR VETERINARIANS

The program for the ninth annual Conference for Veterinarians, at Ithaca, N. Y., January 16 and 17, 1917, has been announced as follows:

Opportunities for the Average Veterinarian ..... V. A .Moore
Some of the Common Parasites of the Domesticated Animals and their

Importance to Veterinarians. Illustrated .....C. P. Fitch
Tuberculosis in Carnivorous Animals.....W. Reid Blair
Suppurative Lesions in Pigs and Cattle due to *Bacillus Pyogenes*
A. R. Ward, Washington, D. C.
Salivary Digestion in the Horse .....C. E. Hayden
Relation of the Veterinarian to the Farm Bureau Work.....H. E. Babcock
Symposium on Poisoning Among Animals:
Poisonous and Stock Killing Plants.....Prof. J. W. Harshberger,
University of Pennsylvania
The New Toxicology .....Prof. E. M. Chamot
Discussion on Poisoning in Animals opened by Drs. Udall, Hollingworth,
Kelly, Knapp and others
Address of Welcome .....President Schurman
The Veterinarian Himself, His Reputation and Success
J. W. Adams, Pennsylvania
Infectious Abortion .....W. L Williams
Formalin in the Treatment of Mastitis .....J. N. Frost
The New Pharmacopoeia .....H. J. Milks
Diagnosis of Tuberculosis .....D. H. Udall, R. R. Birch
Meetings of Alumni Associations.

Clinics will be held in the Surgical, Medical and Small Animal Buildings. In the medical clinic there will be a demonstration of the use of the Sputum Cup by Drs. Udall and Koenig; the use of anti-hog cholera serum by Dr. Birch. Subjects in the other clinics to be announced later. There will also be post mortems by Drs. Fitch and Goldberg.

On the evening of Wednesday, the 17th, there will be a banquet at the Ithaca Hotel, to which all veterinarians attending the conference are invited.

—The Popular Science Monthly for January gives an illustrated account of the work done by Dr. G. W. Little, of the American Society for the Prevention of Cruelty to Animals, relative to anesthesia upon small animals. The method is similar to that in dentistry and involves the use of nitrous oxide and oxygen.

—At a meeting of the Kentucky State Veterinary Examining Board, the middle of December, licenses were issued to more than seventy-five applicants. With those previously issued more than 400 licenses have been issued to veterinarians in the State of Kentucky, a majority of whom are non-graduates. After January 1, the recently enacted law will go into effect and the examinations in the future will be more rigid.

COMMUNICATIONS

Journal of the American Veterinary Medical Association, Ithaca, N. Y.

THE BENEFIT OF COOPERATION

In a recent issue of the Journal of the American Veterinary Medical Association, was contained the announcement that the veterinarians of Oklahoma had united and launched into existence a new and creditable association. This is indeed, a step in the right direction and a cause for congratulations from all right minded veterinarians.

For quite a period, I was assigned to Oklahoma in conducting educational work among farmers and others, and it was my good fortune to come into personal contact with many of the practicing veterinarians. It had always been a source of wonderment why such men as composed the profession in that state would allow strife and dissension to handicap the progress and benefit that might accrue to any profession, especially their own, by the union of efforts of many members bound together by one common cause. The culmination of their efforts into the organization of the present association amply justifies the opinion formed, that the standard of the veterinary profession in Oklahoma was deserving of special credit.

Another phase of this movement which is cause for favorable comment is the fact that veterinarians in the federal employ participated in the organization. It is gratifying to note that professional prejudice is dying out and that bonds of mutual interests are being cemented and apply to all veterinarians, whether they are private practitioners, municipal, state or federal agents or engaged in the care of mounts for the soldiers and officers of Uncle Sam. In the general tendencies of today for cooperation among and between classes, let it go forth that the veterinarian at the state college, in the private institution of veterinary medicine, in the eradication of contagious and infectious diseases, in the army, in the slaughter house, in municipal sanitation, or as a private practitioner, is entitled to the respect, the courtesy and the fair judgment of the profession. Each of these assignments, of course, should be the medium for the veterinarian to make the most of his opportunities, having in mind, always, the best in his chosen field, the judicious direction of efforts, the accomplishment of professional tasks, devoting his energies constantly towards the goal of a high standard of efficiency.

The time is now opportune for the veterinarians of other states and centers to emulate the action of those in Oklahoma. Complete and efficient organization is the order of the day, which means cooperation, and which in turn means applying to life in general and to the profession in particular the golden rule, "do unto others as you wish them to do to you."

T. P. WHITE.

REVIEW

THE PATHOLOGY AND DIFFERENTIAL DIAGNOSIS OF THE INFECTIOUS DISEASES OF ANIMALS

VERANUS ALVA MOORE

Professor of Comparative Pathology, Bacteriology and Meat Inspection, New York State Veterinary College at Cornell University, and Dean of the College.

Fourth edition, revised and enlarged, XVI and 593 pp., 120 illustrations. New York, MacMillan Co., 1916. $4.00.

It has been eight years since the publication of the third edition of Moore's Pathology of the Infectious Diseases. Since that time considerable has been added to what is known of the infectious diseases. Practitioners and sanitarians will welcome the appearance of the fourth edition, which has been revised and partly rewritten. While there are only fifteen more pages in the new edition, there is much new matter.

Some rearrangement of the material has been made but the same plan has been followed in this as in previous editions. The titles of the chapters indicate the arrangement. They are:

I. Etiology, infection and specific infectious diseases. II. Diseases caused by bacteria—genus Streptococcus. III. Diseases caused by bacteria—genus Micrococcus. IV. Diseases caused by bacteria—genus Bacterium. V. Diseases caused by bacteria—genus Bacillus. VI. Diseases caused by higher bacteria. VII. Diseases caused by Fungi. VIII. Diseases caused by protozoa—genus Spirochaeta. IX. Diseases caused by protozoa—genus Ameba. X. Diseases caused by protozoa—genus Piroplasma. XI. Diseases caused by protozoa—genus Trypanosoma. XII. Diseases caused by protozoa—genus Microsporidia. XIII. Infectious diseases for which the specific cause is not determined. XIV. Immunity and protective inoculation. XV. Disinfection. Two appendices are added, I. State requirements governing admission of live stock, and II. Regulations governing the meat inspection of the United States Department of Agriculture.

In general each disease is discussed as to its characterization, history, geographical distribution, etiology, symptoms, morbid anatomy, diagnosis, prevention, specific biologic treatment and control. Of these much more attention is given to etiology, morbid anatomy and diagnosis. This is just the kind of information needed by those who have to do with the prevention or control of the infectious diseases of animals. In these harvest days of the manufacturers of biologic products, when for every ill there is one

or more serums, vaccines or the like, the practitioner will be glad of the opportunity to consult, as he may in this book, a disinterested and reliable authority.

Dr. Moore has more than kept up to the high standard of excellence set in the earlier editions of this work. The publishers are to be congratulated on the manner in which they have done their part. The paper, printing and illustrations are excellent.

S. H. B.

NECROLOGY

WILLIAM JOHN COATES, M.D., D.V.S.

Dr. William J. Coates died at his home in New York City on Tuesday, December 19, 1916, at the age of 58 years, after an illness extending over a period of about two years, during which time, he had spells of convalescence which permitted him to return to his office for a time.

Born in New York City in 1858, he attended the public schools there, subsequently entering Georgetown University, and on completion of his studies at that institution, he returned to New York and entered the American Veterinary College, from which he graduated in 1877, with the degree of Doctor of Veterinary Surgery.

His amiable disposition and earnestness of purpose attracted the attention of the Dean of the veterinary school, Dr. Alexander F. Liautard, who became his life-long friend. After his graduation from the veterinary school, Dr. Liautard made him House Surgeon, and later, Assistant Surgeon on his hospital staff. Finally, as years went on, and the American Veterinary College grew until it was the leading veterinary school in this country at that time, with a large hospital crowded with patients as well as a very large free clinic of animals brought in from outside by their owners at stated periods, Dr. Liautard advanced Dr. Coates to the position of Chief Surgeon, himself assuming the important post of Clinical Director.

In the meantime, in addition to his duties as Chief Surgeon in the hospital, Dr. Coates was taking an active part in teaching in the veterinary school, and was himself attending lectures at the Bellevue Hospital Medical College, from which institution he graduated with the degree of Doctor of Medicine, in 1882.

The doctor's duties continued to increase, and after becoming Professor of Anatomy, Clinical Surgery and many other minor

subjects, he was finally placed in the responsible position of Acting Dean, in the absence of Dr. Liautard.

Those were his many complex duties when in 1899 the American Veterinary College amalgamated with the New York College of Veterinary Surgeons, and became a department of New York University, under the name of the New York-American Veterinary College. In the consolidated institution he was continued as Acting Dean and given the chair of Anatomy, Clinical Surgery and Medicine, and a few years later was made Dean. So that at the time of his death, his position in the New York State Veterinary College at New York University in New York City, (the college having been adopted by the State in 1913) was that of Dean and Professor of Anatomy, Clinical Surgery and Medicine; and next to Dr. Liautard was perhaps the best anatomist in this country. Those in the profession who knew him well, claimed the same for him as a diagnostician.

Dr. Coates had a most amiable disposition, was kind and charitable in his judgment of his fellows and was loved by his students for his justice and loyalty to them. Like all great men, he was modest. He was also extremely reserved, so that it required a very close acquaintance to really know the *man*. This it was our privilege to enjoy for thirty years, during which time we frequently sought him as consultant and adviser and benefitted by his valuable store of knowledge. Close acquaintance also brought out the poetic and social side of Dr. Coates' character that never was possible of appreciation by a casual acquaintance. These qualities as well as his nobility and greatness, were fully appreciated by his friends.

The doctor was an "Honor" member of the American Veterinary Medical Association, a member of the New York State Veterinary Society, and the Veterinary Medical Association of New York City. We believe he was a member of the New York Academy of Medicine, but as we are writing from memory, and at very short notice have not time to verify the latter belief.

Church services were held on Friday, December 22d, at which the Chancellor of New York University, the President of the University Council, members of the Veterinary Faculty, and students attended in a body. Dr. Coates is survived by a widow and two sons, William J., 22 years of age, and Hugh, 20 years of age.

R. W. E.

MISCELLANEOUS

—U. S. Civil Service Examination. The U. S. Civil Service Commission announces an open competitive examination for veterinarians, for men only, on January 17, 1917. From the register of eligibles resulting from this examination certification will be made to fill vacancies as they occur in the position of veterinary inspector at the entrance salary of $1,400 a year in the Bureau of Animal Industry, and in positions requiring similar qualifications.

—The circular for the one week course for graduate veterinarians to be given at the Agricultural and Mechanical College at West Raleigh, N. C., announces the following staff of instructors: Dr. R. C. Moore, Missouri; Dr. N. S. Mayo, Chicago, Ill.; Dr. T. B. Carroll, Wilmington, N. C.; Dr. P. F. Bahnsen, Georgia; Dr. J. P. Turner, Washington, D. C.; Dr. L. F. Koonce; Prof. Z. P. Metcalf; Dr. B. F. Kaupp; Dr. G. A. Roberts; Dr. Tait Butler; Dr. J. I. Handley.

—The report of the prosecuting committee of the Veterinary Medical Association of New York City states that the committee has endeavored to carry on the unpleasant task of prosecution, impartially, energetically and without fear or favor. It is hoped the work may be continued until the Veterinary Law is acknowledged by every practitioner in the State of New York. Fourteen arrests have been made. Thirty-eight contributors furnished a fund of $735.00 of which $559.85 have been disbursed.

—A quarantine on dogs against rabies, has been recommended in Yakima County, Washington.

—Dr. Adam Fisher, who has served the city of Charlotte, N. C., under several administrations, as city food and milk inspector, has tendered his resignation and will hereafter devote his entire time to veterinary practice.

—At the recent meeting of the Schuylkill Valley Veterinary Medical Association at Reading, Pa., there were about fifty in attendance.

—Dr. Paul R. King has been transferred from San Antonio, Texas, to Potwin, Kansas.

—Dr. H. S. Van Vranken has removed from Story City to Burt, Iowa.

—Dr. J. M. Baxter has removed from Middlebury to Gary, Ind.